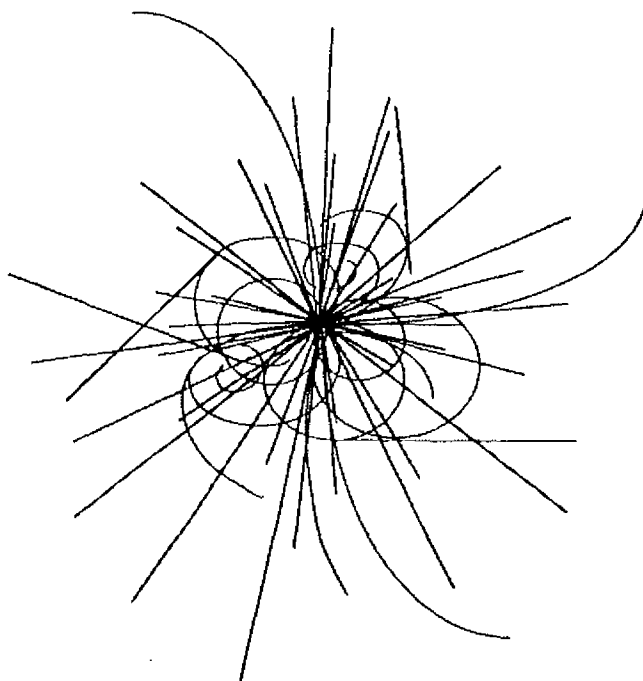


SSC PROJECT MONTHLY PROGRESS REPORT

AUGUST 1990



SSC



LABORATORY

Introduction

With this monthly report, the SSC Laboratory begins providing data in the formats prescribed by DOE Orders 4700.1 and 1332.1. This report also includes the first automated Cost Performance Report (CPR) from the laboratory database.

This report is organized into two sections:

- 1) the Project Manager's Progress Report, including the CPR (in place of Section 7, Alternative Cost Report, per 4700.1), and

- 2) the narrative report by WBS used in prior Monthly Reports.

Future reports will migrate the PM Progress Report format into AD Progress Reports in lieu of the narratives.

The CPR in this report is based on the FY90 BAC only, not the TEC/TPC of the proposed Baseline since Baseline approval is still pending. Because the FY90 data is aggregate history, the Budgeted Cost of Work Scheduled (BCWS) equals the Actual Cost of Work Performed (ACWP) and Budgeted Cost of Work Projected (BCWP) to July 1990. From July 1990 the BCWP reflects two equal monthly increments to realize a Budget at Completion (BAC) equal to the Authorization for determination of August cost variances. Finally, it should be noted that contract modification #8 is not yet included in the Authorization value.

PROJECT MANAGER'S PROGRESS REPORT PART I

1. IDENTIFIERS:

1a. PROJECT TITLE/NUMBER
Superconducting Super Collider Laboratory DE-AC02-89ER40486

1b. REPORTING PERIOD
October 1, 1989 - August 31, 1990

1c. MANAGING DOE FIELD LOCATION

SSC Project Office
2550 Beckleymeade Ave., MS1020
Dallas, Texas 75237

1f. PERFORMING ORGANIZATION(S)

Universities Research Association, Inc.
1111 19th St. N.W., Suite 400
Washington, D.C. 20036

1d. PROJECT SPONSOR/PROGRAM OFFICE CONTACT

Joseph R. Cipriano

1e. PROJECT MANAGER

Ted Kozman

Ted Kozman

2a. SUMMARY STATUS

Green



Yellow



Red



COST
SCHEDULE
TECHNICAL
OVERALL PROJECT

Y

G

G

G

LAST PERIOD

G

G

G

G

THIS PERIOD

**PROJECT MANAGER'S PROGRESS REPORT
PART I**

PROJECT TITLE:

Superconducting Super Collider Laboratory

2b. PROJECT MANAGER'S NARRATIVE HIGHLIGHTS AND KEY ISSUES

(See item 5 for details on problems and variances)

- 1) The Baseline Cost Estimate was finalized at \$8.245 billion (including FY88 and FY89) along with a 10-year Baseline Schedule. These Baselines await official sanction after which they will be incorporated into this report.
- 2) The SEIS was delivered to DOE Headquarters on August 10. Public hearings are scheduled for September 19 and 20 in Ellis County. The revised Site Specific Conceptual Design Report (SCDR) and Executive Summary are available with the SEIS for public access.
- 3) The letter subcontract with PB/MK was executed on August 17 to provide A-E/CM services while the final contract is being negotiated.
- 4) Brookhaven began testing on the latest full length collider dipole (DC0201) which has an "anti-ovalized" collar. It plateaued at short sample after conditioning and showed good field quality.
- 5) Tests at Lawrence Berkeley on the 1 meter quadrupole showed significant training but at currents well above the design current. All quenches were on the inner layer pole turn mainly in the lead side. Assembly procedure changes are expected to reduce the training for the next quadrupole.
- 6) Requests for Proposals are under development for both the collider quadrupole magnets and the superconducting wire and cable.
- 7) The Magnet Evaluation Laboratory is now fully operational and performing magnet vibration studies and on autopsy of DD0018.
- 8) The Magnet Development Laboratory preliminary design is being finalized with PB/MK.
- 9) The Laboratory added seventy new employees bringing the total to 757.
- 10) The Yellow Cost Condition reported last month has been resolved. See following page.

Report of a Management Condition Yellow

The CCD provided the following analysis of the cost variance reported last month:

In April, while CCD's budget was still at \$26,218K for the year, two large requisitions were issued to RTK and PB/MK for a combined commitment of \$6,500K. This brought the total costs and commitments for major subcontracts up to the total budgeted amount of \$14,200K.

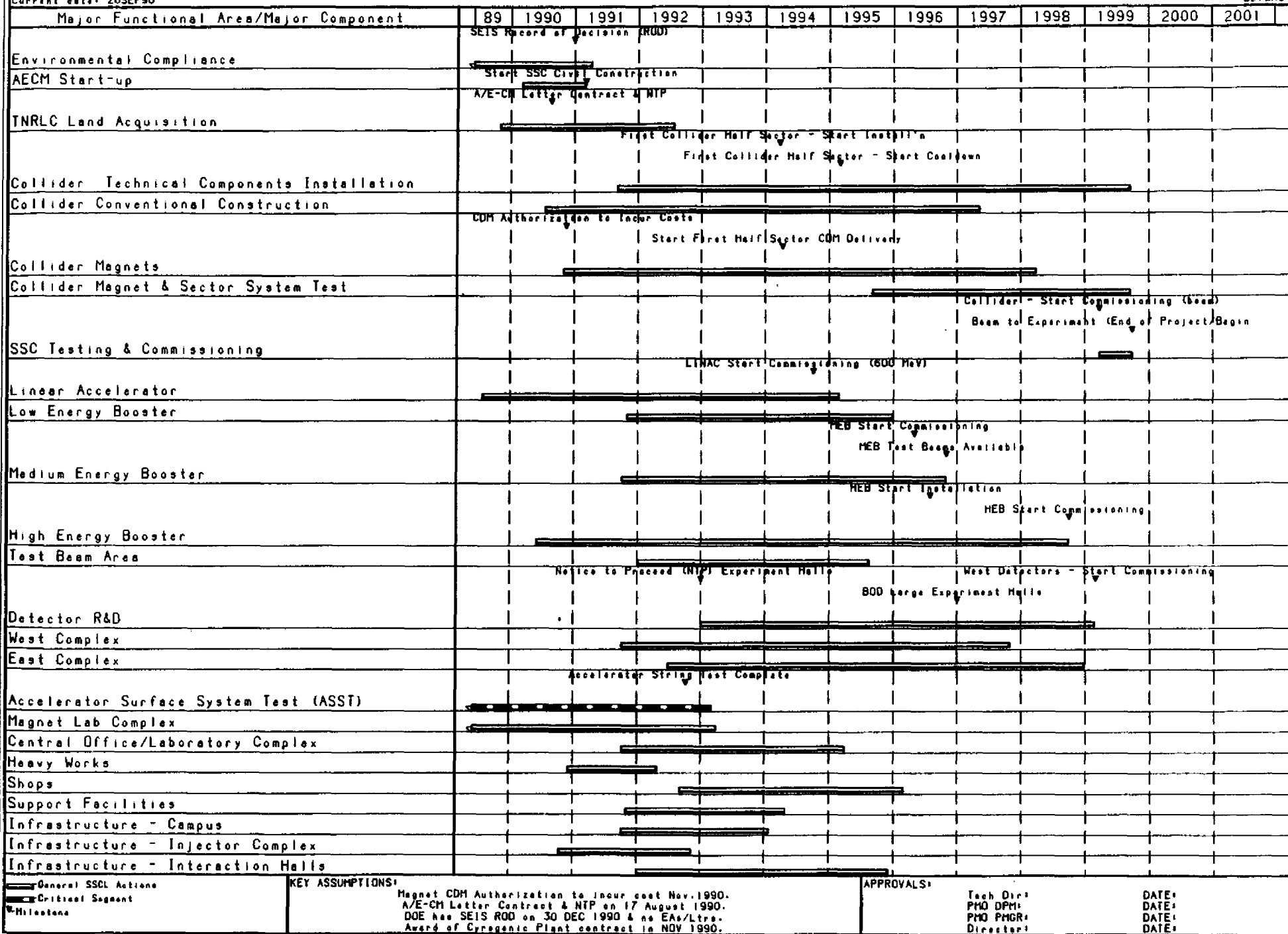
On May 4, 1990, a work authorization was signed by Project Management and Robert M. Matyas, then Acting Head of CCD. This work authorization reduced CCD's authorized budget by \$7,841K. May financial statements projected a budget deficit of \$893K for major subcontracts. Mr. Matyas was advised of this and on June 15, he issued a memo to Dr. Helen Edwards, Technical Director, of the projected deficit. He also advised her that this amount could increase substantially depending on contract negotiations with both PB/MK and Sverdrup Corporation. Allocation of Management Reserve funds was requested to cover this deficiency.

As a result of several factors, the projected deficit at the end of July had increased to \$1,481K. No Management Reserve funds had been allocated as yet. A second memo was drafted, this time to Ted Kozman, requesting coverage of the projected deficit amount. It was also noted in the memo that if the MDL were to proceed as scheduled, an additional amount of approximately \$3 million would be required for this fiscal year.

Management Reserve, in the amount of \$5 million, was provided to CCD in August to provide sufficient funds for the remainder of FY90. Release of the Management Reserve has corrected the prior variance while maintaining total projected FY90 BAC on target.

PROJECT MANAGER'S PROGRESS REPORT PART I				PROJECT TITLE: Superconducting Super Collider Laboratory																																																							
3. SUMMARY FUNDING/COST STATUS (000) (See item 5 for Variance Analysis)																																																											
3a. TOTAL PROJECT <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <th style="width: 15%;">ITEM</th> <th style="width: 15%;">BASELINE</th> <th style="width: 15%;">FUNDING</th> <th style="width: 15%;">CURRENT EST</th> </tr> <tr> <td>Total Project Cost (TPC)</td> <td style="text-align: center;">175,486</td> <td style="text-align: center;">175,486</td> <td style="text-align: center;">175,486</td> </tr> <tr> <td>DOE</td> <td style="text-align: center;">175,486</td> <td style="text-align: center;">175,486</td> <td style="text-align: center;">175,486</td> </tr> <tr> <td>Texas</td> <td style="text-align: center;">-----</td> <td style="text-align: center;">-----</td> <td style="text-align: center;">-----</td> </tr> <tr> <td>Other: Foreign</td> <td style="text-align: center;">-----</td> <td style="text-align: center;">-----</td> <td style="text-align: center;">-----</td> </tr> <tr> <td>Other: Industry</td> <td style="text-align: center;">-----</td> <td style="text-align: center;">-----</td> <td style="text-align: center;">-----</td> </tr> <tr> <td>Total Est'd Cost (TEC)</td> <td style="text-align: center;">175,486</td> <td style="text-align: center;">175,486</td> <td style="text-align: center;">175,486</td> </tr> <tr> <td>DOE</td> <td style="text-align: center;">175,486</td> <td style="text-align: center;">175,486</td> <td style="text-align: center;">175,486</td> </tr> <tr> <td>Non-DOE</td> <td></td> <td></td> <td></td> </tr> </table>				ITEM	BASELINE	FUNDING	CURRENT EST	Total Project Cost (TPC)	175,486	175,486	175,486	DOE	175,486	175,486	175,486	Texas	-----	-----	-----	Other: Foreign	-----	-----	-----	Other: Industry	-----	-----	-----	Total Est'd Cost (TEC)	175,486	175,486	175,486	DOE	175,486	175,486	175,486	Non-DOE				3b. CUMULATIVE TO DATE <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <th style="width: 60%;">ITEM</th> <th style="width: 40%;">AMOUNT</th> </tr> <tr> <td>Remaining Contingency</td> <td></td> </tr> <tr> <td>Approved TEC of Current Subprojects</td> <td style="text-align: center;">175,486</td> </tr> <tr> <td>Appropriations (DOE Fin-Plans)</td> <td style="text-align: center;">175,486</td> </tr> <tr> <td>Appropriations (Texas)</td> <td></td> </tr> <tr> <td>Appropriations (Other - Foreign)</td> <td></td> </tr> <tr> <td>Appropriations (Other - Industry)</td> <td></td> </tr> <tr> <td>Contractor Commitments</td> <td style="text-align: center;">30,881</td> </tr> <tr> <td>Contractor Incurred Costs</td> <td style="text-align: center;">118,880</td> </tr> </table>		ITEM	AMOUNT	Remaining Contingency		Approved TEC of Current Subprojects	175,486	Appropriations (DOE Fin-Plans)	175,486	Appropriations (Texas)		Appropriations (Other - Foreign)		Appropriations (Other - Industry)		Contractor Commitments	30,881	Contractor Incurred Costs	118,880
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3c. BASELINE DOCUMENTATION: <div style="display: flex; justify-content: space-between; margin-top: 20px;"> DOCUMENT TITLE _____ APPROVING OFFICIAL _____ DATE _____ </div> <div style="margin-top: 40px; margin-left: 20px;"> Mod 8 not yet incorporated - not included in appropriations figure. </div>																																																											

Summary Master Schedule



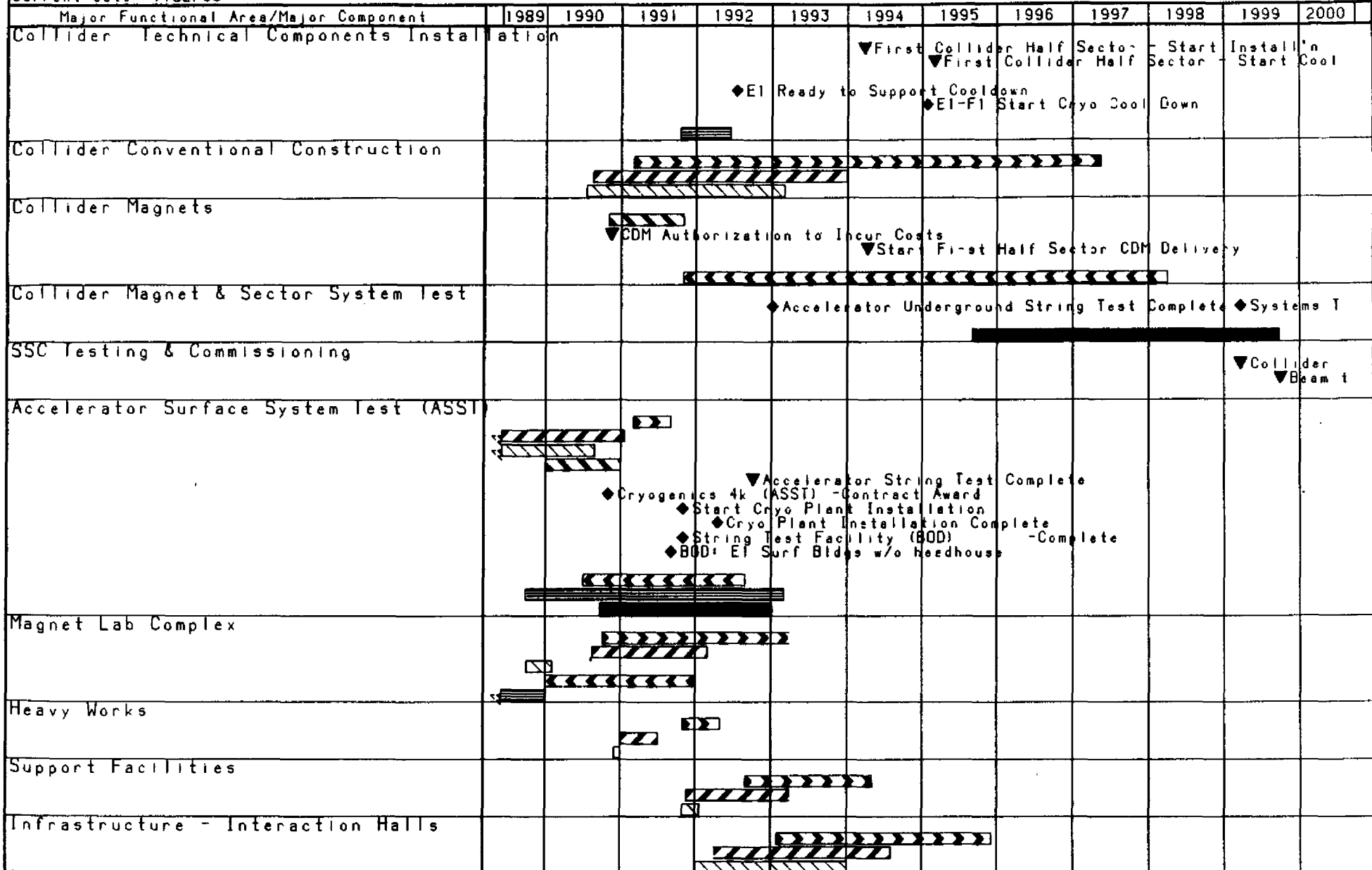
SUMMARY SCHEDULE

COLLIDER RING

SUN-COI

Current date: 11SEP90

BL12R6



RESEARCH
 TECHNICAL DESIGN
 PROC./FABRICATION
 FAC-PREDESIGN/CRITER
 A/E DESIGN
 CONV. CONSTRUCTION
 TECHNICAL INSTALL
 TEST & ACCEPTANCE
 DOE MILESTONE
 LEVEL 1 MILESTONE

KEY ASSUMPTIONS:

Magnet CDM Authorization to incur cost Nov.1990.
 A/E-CM Letter Contract & NIP on 17 August 1990.
 DOE has SEIS ROD on 30 DEC 1990 & no EAa/Ltra.
 Award of Cryogenic Plant contract in NOV 1990.

APPROVALS:

CCD ADIR: DATE:
 ADIR: ADIR: DATE:
 Tech Dir: DATE:
 PMO DPM: DATE:
 PMO PMGR: DATE:

Data Transmitted to PMS on:

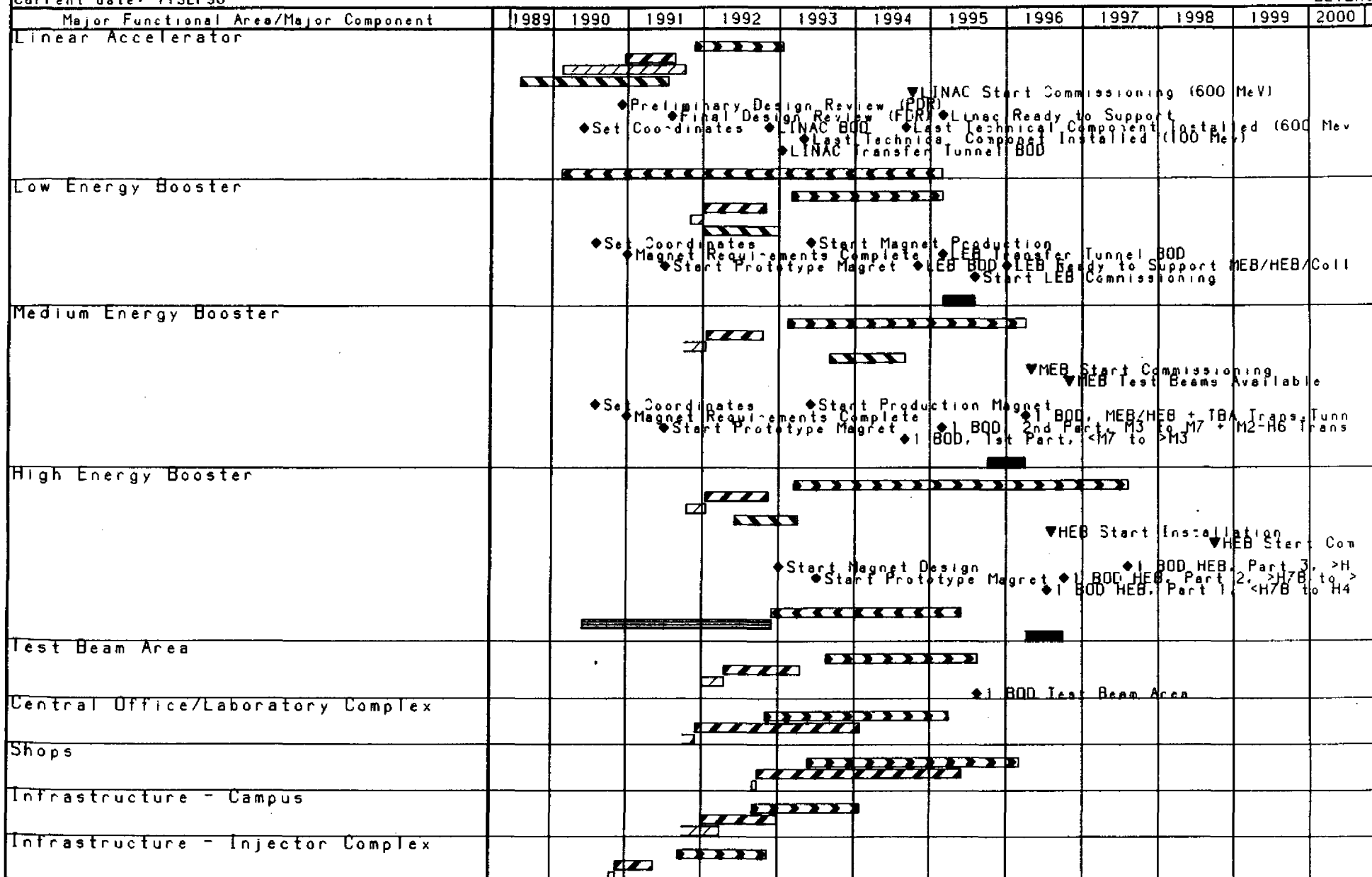
SUMMARY SCHEDULE

Current date: 11SEP90

INJECTOR

SUN-AC1

BL12R6



EXPERIMENTAL

SUM-E1
BL12R6

Data Transmitted to FRBS of...

PROJECT MANAGER'S PROGRESS REPORT PART I			PROJECT TITLE: Superconducting Super Collider Laboratory
5. SIGNIFICANT PROBLEMS/VARIANCE ANALYSIS			RESPONSIBLE GROUP
5a. PROBLEMS, IMPACT ON PROJECT, CORRECTIVE ACTION			
PROBLEM IDENTIFICATION	IMPACT	CORRECTIVE ACTION	
5b. ITEMS REQUIRING SSCL/CUSTOMER ACTION			
Assurance of timely acquisition of land at E1 site	Could disrupt ASST and/or MTL construction start and BOD	Close and frequent monitoring of TNRLC land acquisition, closing, turnover to US Government and DOE turnover to SSCL of these key tracts by PM, CCD and DOE/OPO.	
Timely SSCL proposal analysis and recommendation of CDM contracts and quick DOE approval to incur costs	Could delay Dipole Magnet Industrialization Program and thus affect delivery times of contractor produced magnets for installation	Focused effort by MSD and SSCL Procurement, frequent monitoring by PMO and DOE/OPO and prompt review and concurrence by OSSC.	

PROJECT MANAGER'S PROGRESS REPORT PART II				PROJECT TITLE: Superconducting Super Collider Laboratory				
6. COST STATUS REPORT								
COST ELEMENTS			FORECAST					
	CUMULATIVE THROUGH PRIOR FISCAL YEAR	CURRENT FISCAL YEAR TO DATE	CURRENT FISCAL YEAR		NEXT FISCAL YEAR		TOTAL	
	BASELINE	ACTUAL	BASELINE	ESTIMATE	BASELINE	ESTIMATE	BASELINE	ESTIMATE
DOE FUNDED COST ASSOC. WITH TEC:								
DESIGN	12,263	118,880		53,545		307,000		
CONSTRUCTION								
PROCUREMENT								
CONTINGENCY								
DOE TEC	12,263	118,880		53,545		307,000		
OTHER COSTS:								
- PE&D								
- CONCEPTUAL DESIGN								
- R&D								
- ALL OTHER								
TOTAL DOE PROJECT COST	12,263	118,880		53,545		307,000		
- NON-DOE COSTS:								
- TOTAL ESTIMATED COSTS								
- OTHER COSTS								
TOTAL PROJECT COST	12,263	118,880		53,545		307,000		

CONTRACTOR: SSC LABORATORY LOCATION: DALLAS, TX		COST PERFORMANCE REPORT - FUNCTIONAL CATEGORIES						SIGNATURE, TITLE & DATE <i>Ed K...</i> 31-AUG-90		FORM APPROVED OMB NUMBER 22R0280					
		CONTRACT TYPE/NO: DE-AC02-89ER40486		PROGRAM NAME/NUMBER:		REPORT PERIOD From: 30-JUL-90 To: 26-AUG-90									
RDT&E [X] PRODUCTION []		EST COST AUTH UNPR \$0		TARGET PROFIT/FEE \$0/ 0.00%		EST PRICE \$0		TGT PRICE \$0		SHARE RATIO		CONTR CEILING \$0		EST CEILING \$0	
QUANTITY 0		NEG COST \$0													
ORGANIZATIONAL OR FUNCTIONAL CATEGORY		CURRENT PERIOD				CUMULATIVE TO DATE				AT COMPLETION					
		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR	
		Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost				
D DIRECTORATE		477	477	440	0	37	4983	4983	4946	0	37	5457	5457	0	
B PROJECT MANAGEMENT		1709	1709	519	0	1191	6691	6691	5500	0	1191	8365	8365	0	
A ACCELERATOR SYSTEMS		6368	6368	2120	0	4248	22032	22032	17784	0	4248	27297	27297	0	
C CONVENTIONAL CONSTR		2478	2478	2131	0	347	16533	16533	16186	0	347	23779	23779	0	
T TECHNICAL SERVICES		2839	2839	1166	-0	1673	12564	12564	10891	-0	1673	15445	15445	0	
G ADMINISTRATIVE SRVC		896	896	838	0	58	10164	10164	10106	0	58	11561	11561	0	
P PHYSICS RESEARCH		1682	1682	772	0	910	8218	8218	7307	0	910	11457	11457	0	
M MAGNET SYSTEMS		14252	14252	4978	0	9274	55434	55434	46160	0	9274	69722	69722	0	
SUBTOTAL		30703	30703	12965	0	17738	136618	136618	118880	-0	17738	173083	173083	0	
COST OF MONEY		0	0	0	0	0	0	0	0	0	0	0	0	0	
GEN AND ADMIN (NON ADD)		0	0	0	0	0	0	0	0	0	0	0	0	0	
UNDISTRIBUTED BUDGET												0	0		
SUBTOTAL		30703	30703	12965	0	17738	136618	136618	118880	0	17738	173083	173083	0	
MANAGEMENT RESERVE												2403	2403	0	
TOTAL		30703	30703	12965	0	17738	136618	136618	118880	0	17738	175486	175486	0	

CONTRACTOR: SSC LABORATORY LOCATION: DALLAS, TX		COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE						SIGNATURE, TITLE & DATE		FORM APPROVED OMB NUMBER 22R0280				
RDT&E [X] PRODUCTION []		CONTRACT TYPE/NO: DE-AC02-89ER40486		PROGRAM NAME/NUMBER:		REPORT PERIOD From: 30-JUL-90 To: 26-AUG-90		31-AUG-90						
QUANTITY 0	NEG COST \$0	EST COST AUTH UNPR \$0	TARGET PROFIT/FEE \$0/ 0.00%		EST PRICE \$0	TGT PRICE \$0	SHARE RATIO	CONTR CEILING \$0	EST CEILING \$0					
ITEM		CURRENT PERIOD				CUMULATIVE TO DATE				AT COMPLETION				
		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR
		Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost			
1	TECHNICAL SYSTEM	8657	8657	1612	0	7045	18129	18129	11083	0	7045	26719	26719	0
2	CONVENTIONAL CONSTRU CTION	2478	2478	2131	0	347	16533	16533	16186	0	347	23779	23779	0
3	PROJECT MANAGEMENT & SUPPORT FUNCTION	1709	1709	519	0	1191	6691	6691	5500	0	1191	8365	8365	0
4	R&D & PRE-OPERATIONS	16549	16549	8107	0	8443	88910	88910	80467	0	8443	105351	105351	0
5	EXPERIMENTAL SYSTEMS	0	0	25	0	-25	261	261	287	0	-25	303	303	0
7	ESCALATION & CONTING ENCY	0	0	0	0	0	0	0	0	0	0	0	0	0
COST OF MONEY							CONTINUED							
GEN AND ADMIN (NON ADD)														
UNDISTRIBUTED BUDGET														
SUBTOTAL														
MANAGEMENT RESERVE														
TOTAL														

CONTRACTOR: SSC LABORATORY LOCATION: DALLAS, TX		COST PERFORMANCE REPORT - WORK BREAKDOWN STRUCTURE						SIGNATURE, TITLE & DATE <i>F. L. K. [Signature]</i> 31-AUG-90		FORM APPROVED OMB NUMBER 22R0280			
CONTRACT TYPE/NO: DE-AC02-89ER40486		PROGRAM NAME/NUMBER:		REPORT PERIOD From: 30-JUL-90 To: 26-AUG-90									
IDT&E [X] PRODUCTION []													
QUANTITY 0	NEG COST \$0	EST COST AUTH UNPR \$0	TARGET PROFIT/FEE \$0/ 0.00%	EST PRICE \$0	TGT PRICE \$0	SHARE RATIO	CONTR CEILING \$0	EST CEILING \$0					
ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
	BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR
	Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost			
LAB OPERATIONS SUPPORT	1308	1308	571	0	737	6095	6095	5358	0	737	8567	8567	0
COST OF MONEY	0	0	0	0	0	0	0	0	0	0	0	0	0
GEN AND ADMIN (NON ADD)	0	0	0	0	0	0	0	0	0	0	0	0	0
UNDISTRIBUTED BUDGET											0	0	
SUBTOTAL	30703	30703	12965	0	17738	136618	136618	118880	0	17738	173083	173083	0
MANAGEMENT RESERVE											2403	2403	0
TOTAL	30703	30703	12965	0	17738	136618	136618	118880	0	17738	175486	175486	0

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
	BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR
	Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost			
1 TECHNICAL SYSTEM	8657	8657	1612	0	7045	18129	18129	11083	0	7045	26719	26719	0
1.1 ACCELERATOR SYSTEMS	1096	1096	0	0	1096	1096	1096	0	0	1096	2112	2112	0
1.1.1 MANAGEMENT/SUPPORT	1096	1096	0	0	1096	1096	1096	0	0	1096	2112	2112	0
1.1.2 LINAC SYSTEM	0	0	0	0	0	0	0	0	0	0	0	0	0
1.1.3 LEB SYSTEM	0	0	0	0	0	0	0	0	0	0	0	0	0
1.1.4 HEB SYSTEM	0	0	0	0	0	0	0	0	0	0	0	0	0
1.1.5 HEB SYSTEM	0	0	0	0	0	0	0	0	0	0	0	0	0
1.1.6 COLLIDER SYSTEM	0	0	0	0	0	0	0	0	0	0	0	0	0
1.1.7 TEST BEAMS	0	0	0	0	0	0	0	0	0	0	0	0	0
1.1.8 GLOBAL ACCELERATOR S YSTEM	0	0	0	0	0	0	0	0	0	0	0	0	0
1.2 MAGNET SYSTEMS	7561	7561	1612	0	5949	17033	17033	11083	0	5949	24606	24606	0
1.2.1 SYSTEM MANAGEMENT	3018	3018	887	0	2132	9068	9068	6937	0	2132	12093	12093	0

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
	BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR
	Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost			
1.2.2 HIGH ENERGY BOOSTER (HEB) MAGNET PRODUCT	0	0	2	0	-2	25	25	27	0	-2	25	25	0
1.2.3 COLLIDER RING (CR) M AGNET PRODUCTION	4543	4543	461	0	4082	7311	7311	3228	0	4082	11860	11860	0
1.2.4 SSCL EQUIPMENT/TOOLI NG	0	0	263	0	-263	628	628	891	0	-263	629	629	0
2 CONVENTIONAL CONSTRU CTION	2478	2478	2131	0	347	16533	16533	16186	0	347	23779	23779	0
2.1 CONVENTIONAL CONSTRU CTION ACCELERATOR	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1.1 CONVENTIONAL CONSTRU CTION ADMINISTRATION	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1.2 LINAC	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1.3 LEB	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1.4 MEDIUM ENERGY BOOSTER (MEB)	0	0	0	0	0	0	0	0	0	0	0	0	0

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
	BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR
	Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost			
2.1.5 HEB	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1.6 COLLIDER	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1.7 TEST BEAM	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2 CONVENTIONAL SYSTEM, EXPERIMENTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.1 WN REGION	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.2 WS REGION	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.3 EN REGION	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.4 ES REGION	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.5 SUPPORT FUNCTIONS	0	0	0	0	0	0	0	0	0	0	0	0	0
2.3 SITE & INFRASTRUCTUR E	0	0	0	0	0	0	0	0	0	0	0	0	0
2.3.1 PRIMARY SYSTEMS - OF F-SITE	0	0	0	0	0	0	0	0	0	0	0	0	0

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
	BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR
	Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost			
2.3.2 PRIMARY SYSTEMS - ON -SITE	0	0	0	0	0	0	0	0	0	0	0	0	0
2.3.3 SECONDARY SYSTEMS - ON-SITE	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4 CAMPUS	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.1 CENTRAL LAB/OFFICE A REA	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.2 MAGNET LABORATORY	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.3 ACCELERATOR FACILITI ES	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.4 ENVIRONMENTAL HEALTH FACILITE	0	0	0	0	0	0	0	0	0	0	0	0	0
2.5 AE/CM	2478	2478	2131	0	347	16533	16533	16186	0	347	23779	23779	0
2.5.1 ARCHITECTURAL ENGINE ERING	1064	1064	10	0	1054	4649	4649	3595	0	1054	7146	7146	0
2.5.2 CONSTRUCTION MANAGEM ENT	1414	1414	2121	0	-707	11884	11884	12591	0	-707	16633	16633	0

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
	BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR
	Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost			
3 PROJECT MANAGEMENT & SUPPORT FUNCTION	1709	1709	519	0	1191	6691	6691	5500	0	1191	8365	8365	0
3.1 PROJECT MANAGEMENT	1190	1190	331	0	859	4711	4711	3852	0	859	5877	5877	0
3.1.1 PROJECT MANAGEMENT O FFICE	161	161	106	0	56	1318	1318	1262	0	56	1474	1474	0
3.1.2 PLANNING	386	386	102	0	285	1121	1121	836	0	285	1501	1501	0
3.1.3 PMRS	187	187	60	0	128	860	860	732	0	128	1043	1043	0
3.1.4 ENGINEERING STANDARD S	239	239	56	0	183	379	379	196	0	183	615	615	0
3.1.5 ENVIRONMENTAL AFFAIR S	215	215	8	0	207	1033	1033	826	0	207	1243	1243	0
3.1.6 OFFICE OF TECHNICAL DIRECTOR	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2 Projects Systems Eng ineering	519	519	188	0	332	1979	1979	1647	0	332	2488	2488	0
4 R&D & PRE-OPERATIONS	16549	16549	8107	0	8443	88910	88910	80467	0	8443	105351	105351	0

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
	BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR
	Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost			
4.1 ACCELERATOR PRE-OPER ATION	0	0	0	0	0	0	0	0	0	0	0	0	0
4.2 RESEARCH & DEVELOPME NT	11963	11963	5487	0	6476	59337	59337	52861	0	6476	70300	70300	0
4.2.1 ACCELERATOR R&D	5200	5200	2049	0	3152	20084	20084	16932	0	3152	24364	24364	0
4.2.2 MAGNET R&D	6691	6691	3366	0	3325	38402	38402	35077	0	3325	45115	45115	0
4.2.3 PHYSICS R&D	71	71	71	0	0	852	852	852	0	-0	821	821	0
4.3 LAB ADMINISTRATION S ERVICES & SUPPORT	896	896	838	0	58	10164	10164	10106	0	58	11561	11561	0
4.3.1 LAB ADMINISTRATION S ERVICES & SUPP OFFIC	398	398	266	0	132	3247	3247	3115	0	132	3810	3810	0
4.3.2 LAB ACCOUNTING & FIN ANCE	122	122	130	0	-7	1949	1949	1956	0	-7	2165	2165	0
4.3.3 LAB PROCUREMENT & CO NTRACTS	205	205	174	0	31	2391	2391	2360	0	31	2715	2715	0
4.3.4 LAB TRAVEL SERVICES	25	25	9	0	16	121	121	105	0	16	153	153	0

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
	BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR
	Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost			
4.3.5 LAB HUMAN RESOURCES	24	24	220	0	-196	2051	2051	2247	0	-196	2169	2169	0
4.3.6 LAB ADMINISTRATION S YSTEM & SUPPORT SERV	35	35	0	0	35	35	35	0	0	35	73	73	0
4.3.7 LAB MINORITY PROGRAM S	86	86	40	0	46	370	370	324	0	46	477	477	0
4.3.8 LAB INTERNAL AUDIT	0	0	0	0	0	0	0	0	0	0	0	0	0
4.4 LAB TECHNICAL SUPPOR T	2839	2839	1166	0	1673	12564	12564	10891	0	1673	15445	15445	0
4.4.1 LAB TECHNICAL SUPPOR T MANAGEMENT	258	258	242	0	17	1345	1345	1328	0	17	1607	1607	0
4.4.2 LAB FACILITIES ENGIN EERING SERVICES	374	374	168	0	207	3894	3894	3687	0	207	4280	4280	0
4.4.3 MATERIAL & LOGISTIC SERVICES	142	142	63	0	79	866	866	787	0	79	1011	1011	0
4.4.4 LAB FABRICATION SHOP S	253	253	23	0	230	346	346	117	0	230	601	601	0

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
	BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR
	Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost			
4.4.5 LAB GENERAL COMPUTER SERVICES	535	535	207	0	328	2836	2836	2508	0	328	3380	3380	0
4.4.6 DESIGN SUPPORT	287	287	108	0	180	764	764	584	0	180	1054	1054	0
4.4.7 LAB COMMUNICATIONS	665	665	211	0	454	1685	1685	1231	0	454	2357	2357	0
4.4.8 ENGINEERING SUPPORT	102	102	38	0	65	345	345	280	0	65	448	448	0
4.4.9 METROLOGY LABORATORY	77	77	11	0	66	170	170	104	0	66	247	247	0
4.4.10 PROTECTIVE SERVICES	5	5	0	0	5	5	5	0	0	5	10	10	0
4.4.11 STAFF SERVICES	138	138	96	0	43	309	309	266	0	43	448	448	0
4.5 LAB DIRECTORATE	292	292	440	0	-148	4798	4798	4946	0	-148	5088	5088	0
4.5.1 LAB DIRECTOR'S OFFIC E	131	131	294	0	-163	2941	2941	3104	0	-163	3071	3071	0
4.5.2 LAB EXTERNAL AFFAIRS	48	48	29	0	19	519	519	500	0	19	567	567	0
4.5.3 LAB LEGAL SERVICES	22	22	39	0	-16	325	325	341	0	-16	347	347	0
4.5.4 LAB RESEARCH & TECHN ICAL ASSESSMENT	-0	-0	0	0	-0	0	0	1	0	-0	-0	-0	0

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
	BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR
	Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost			
4.5.5 LAB USERS' OFFICE	16	16	18	0	-2	236	236	238	0	-2	251	251	0
4.5.6 LAB ENVIRONMENT HEAL TH & SAFETY	39	39	34	0	5	465	465	460	0	5	504	504	0
4.5.7 LAB PLANNING OFFICE	36	36	26	0	10	312	312	301	0	10	348	348	0
4.5.8 LAB INTERNATIONAL CO ORDINATION	0	0	0	0	0	0	0	0	0	0	0	0	0
4.6 EXPERIMENTAL FACILIT IES SUPPORT	374	374	176	0	198	1861	1861	1663	0	198	2587	2587	0
4.6.1 PHYSICS LIBRARY SERV ICE	228	228	128	0	100	990	990	889	0	100	1409	1409	0
4.6.2 TECHNICAL INFORMATIO N & PUBLICATIONS	146	146	48	0	98	872	872	774	0	98	1178	1178	0
4.6.3 EXPERIMENTAL FACILIT IES ADMINISTRATION	0	0	0	0	0	0	0	0	0	0	0	0	0
4.7 LAB PRIME CONTRACTOR FEES	185	185	0	0	185	185	185	0	0	185	370	370	0

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
	BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR
	Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost			
5 EXPERIMENTAL SYSTEMS	0	0	25	0	-25	261	261	287	0	-25	303	303	0
5.1 EXPERIMENTAL SYSTEMS RESEARCH & DEVELOPM	0	0	25	0	-25	261	261	287	0	-25	303	303	0
5.1.1 GENERAL RESEARCH & D EVELOPMENT	0	0	0	0	0	0	0	0	0	0	0	0	0
5.1.2 SUBSYSTEMS RESEARCH & DEVELOPMENT	0	0	0	0	0	0	0	0	0	0	0	0	0
5.1.3 APPROVED EXPERIMENTS RESEARCH & DEVELOPM	0	0	0	0	0	0	0	0	0	0	0	0	0
5.2 DETECTORS	0	0	0	0	0	0	0	0	0	0	0	0	0
5.3 EXPERIMENTAL SYSTEMS COMPUTERS	0	0	0	0	0	0	0	0	0	0	0	0	0
7 ESCALATION & CONTING ENCY	0	0	0	0	0	0	0	0	0	0	0	0	0
7.1 ESCALATION: 1/2/3	0	0	0	0	0	0	0	0	0	0	0	0	0
7.2 ESCALATION: 4/5/6	0	0	0	0	0	0	0	0	0	0	0	0	0

ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION		
	BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGETED COST		ACTUAL COST WORK PERF	VARIANCE		BUDGET	LATEST REVISED EST	VAR
	Work Sched	Work Perf		Sched	Cost	Work Sched	Work Perf		Sched	Cost			
7.3 CONTINGENCY	0	0	0	0	0	0	0	0	0	0	0	0	0
6 LAB OPERATIONS SUPPORT	1308	1308	571	0	737	6095	6095	5358	0	737	8567	8567	0
6.1 PHYSICS PROGRAM SUPPORT	1308	1308	571	0	737	6095	6095	5358	0	737	8567	8567	0
6.1.1 PHYSICS ADMIN AND SUPPORT	115	115	90	0	26	701	701	675	0	26	944	944	0
6.1.2 PHYSICS THEORY	157	157	1	0	156	199	199	43	0	156	412	412	0
6.1.3 EXPER. PHYSICS	527	527	237	0	290	2455	2455	2165	0	290	3451	3451	0
6.1.4 COMPUTING AND DATA ANALYSIS	508	508	244	0	265	2740	2740	2475	0	265	3759	3759	0
6.1.5 ACCELERATOR PHYSICS	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2 LAB OPERATIONS OVERHEAD	0	0	0	0	0	0	0	0	0	0	0	0	0
6.3 ACCELERATOR OPERATNS	0	0	0	0	0	0	0	0	0	0	0	0	0

PROJECT MANAGER'S PROGRESS REPORT PART II		PROJECT TITLE: Superconducting Super Collider Laboratory	
8. MILESTONE LOG			
SIGNIFICANT MILESTONES ACCOMPLISHED SINCE LAST REPORT		BASELINE DATE	ACTUAL DATE
Approval and NTP of A/E-CM Letter Contract		17 Aug 90	17 Aug 90
SIGNIFICANT MILESTONES OPEN		BASELINE DATE	FORECAST DATE
KEY MILESTONES UPCOMING - NEXT THREE MONTHS		BASELINE DATE	FORECAST DATE
SEIS Record of Decision		31 Dec 90	31 Jan 91
CDM Contracts Authorization to Incur Costs		15 Nov 90	15 Nov 90
ASST/E1 Cryogenics Contract Award		July 90	30 Sep 90

PROJECT MANAGER'S PROGRESS REPORT PART II		PROJECT TITLE: Superconducting Super Collider Laboratory
9. TECHNICAL PERFORMANCE PARAMETERS		
ITEM	BASELINE DESCRIPTION	FORECAST

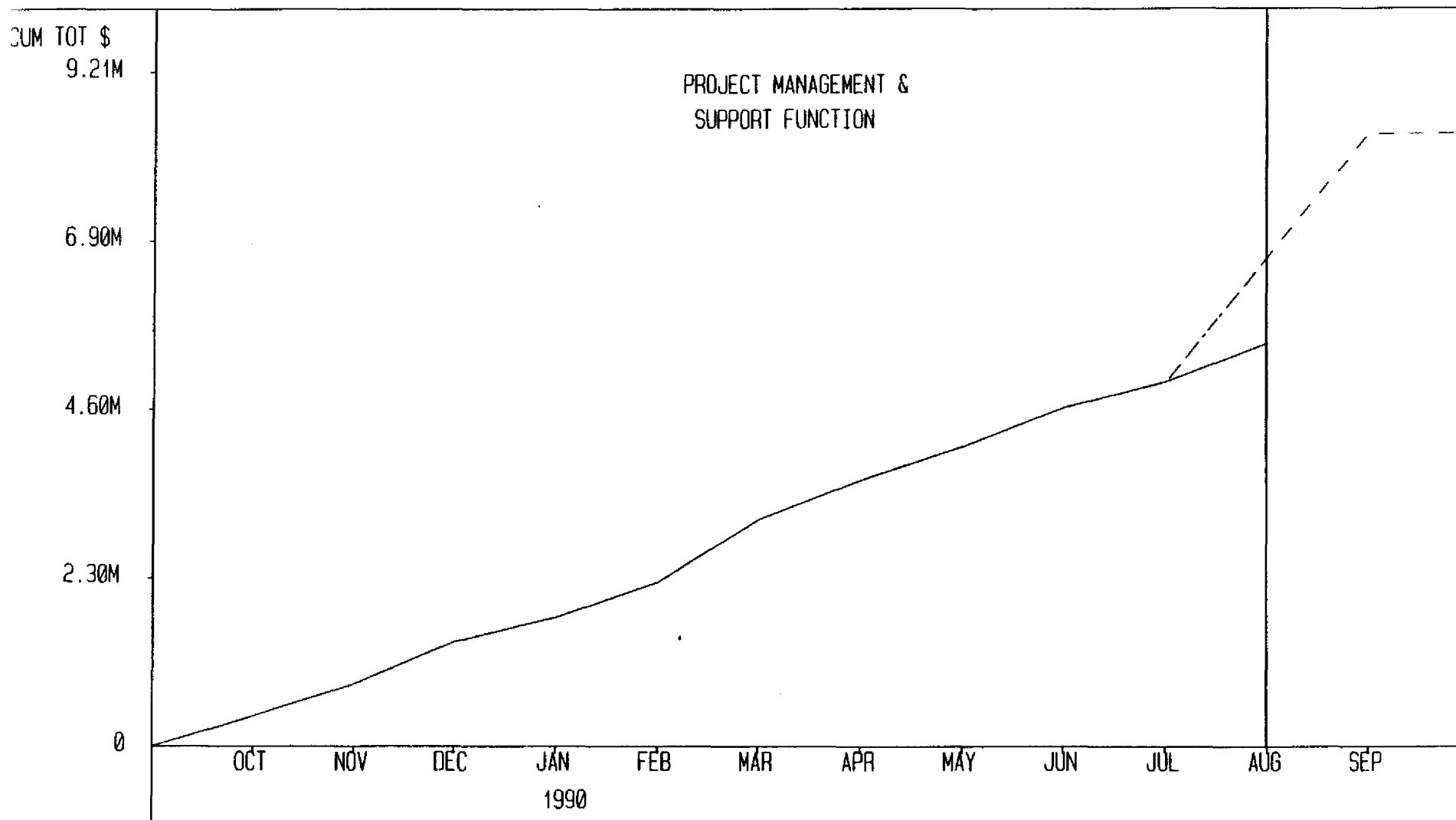
PROJECT: SSC-LAB

PROJECT MANAGEMENT & SUPPORT

09-19-1990

18:53:42

WBS ID: 3



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-----	ACWP	412K	847K	1430K	1769K	2239K	3101K	3639K	4096K	4629K	4981K	5500K	
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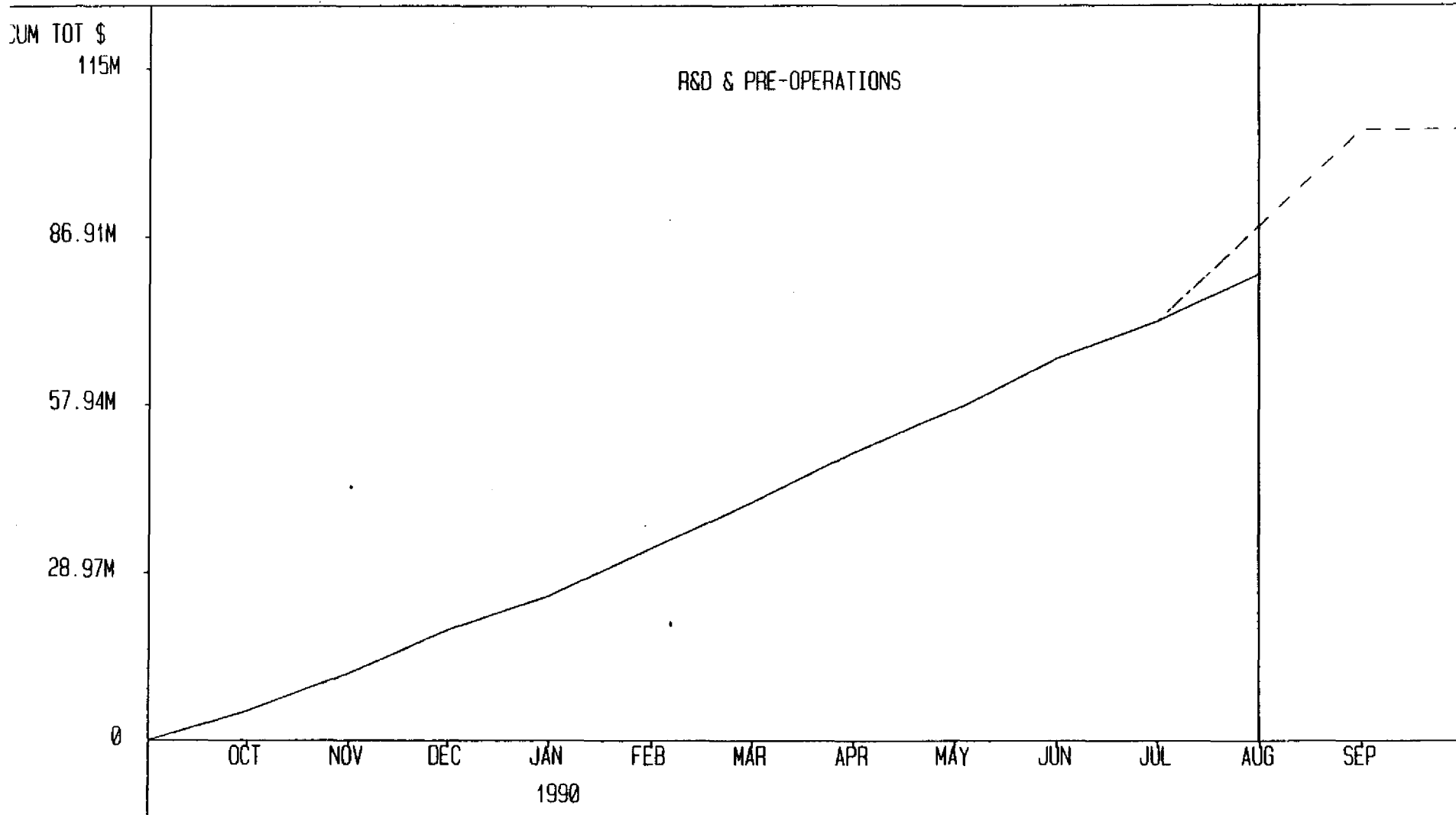
PROJECT: SSC-LAB

R&D PRE-OPERATIONS, ADMIN & SUPPORT

09-19-1990

18:56:46

WBS ID: 4



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PROJECT: SSC-LAB

CONTINGENCIES & ESCALATIONS

09-19-1990

19:05:11

WBS ID: 7

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PROJECT: SSC-LAB

DIRECTORATE

09-19-1990

19:06:53

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3.00M

1.50M

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OCT

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1990

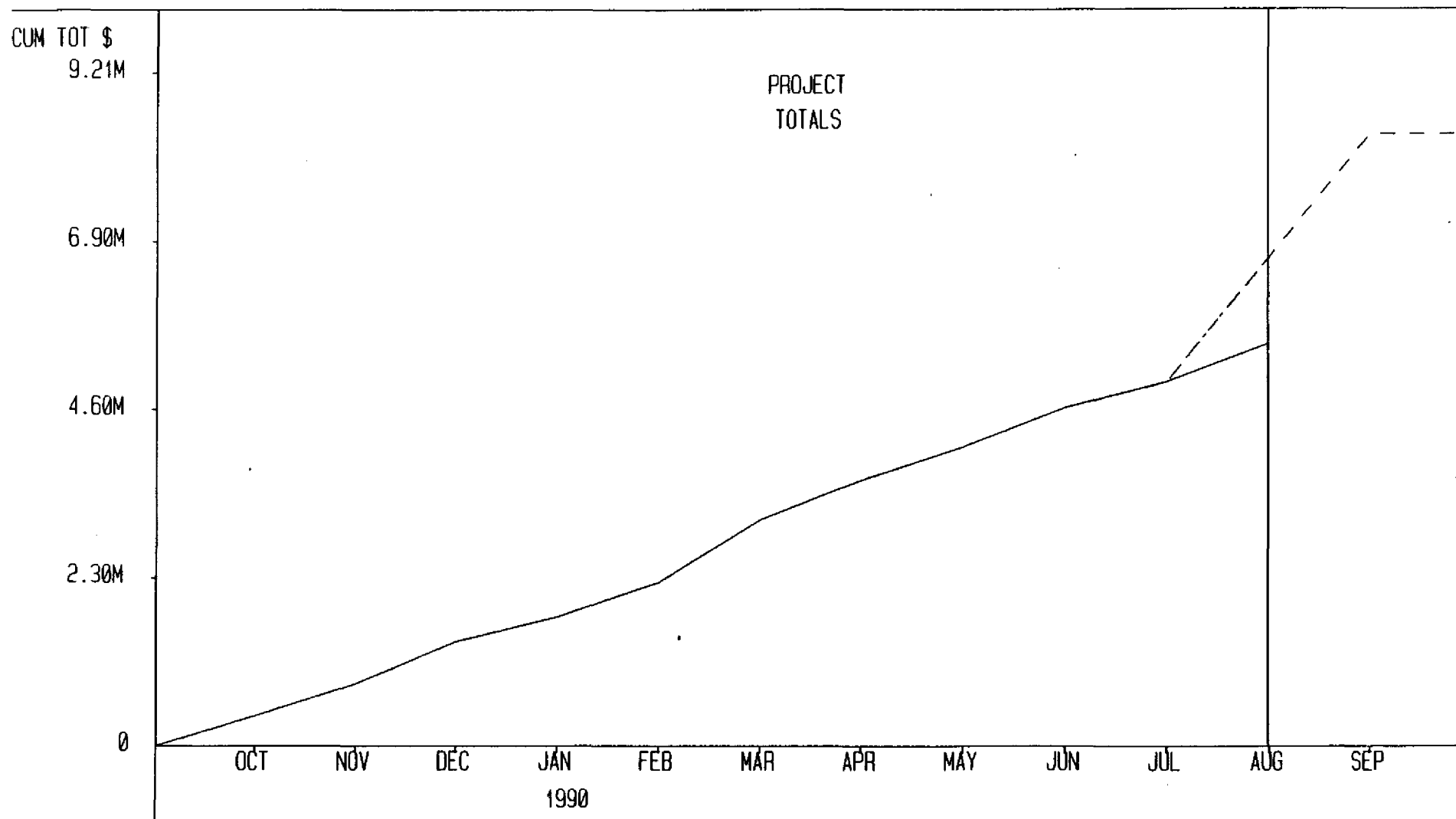
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PROJECT: SSC-LAB

PROJECT MANAGEMENT

09-19-1990

19:10:32



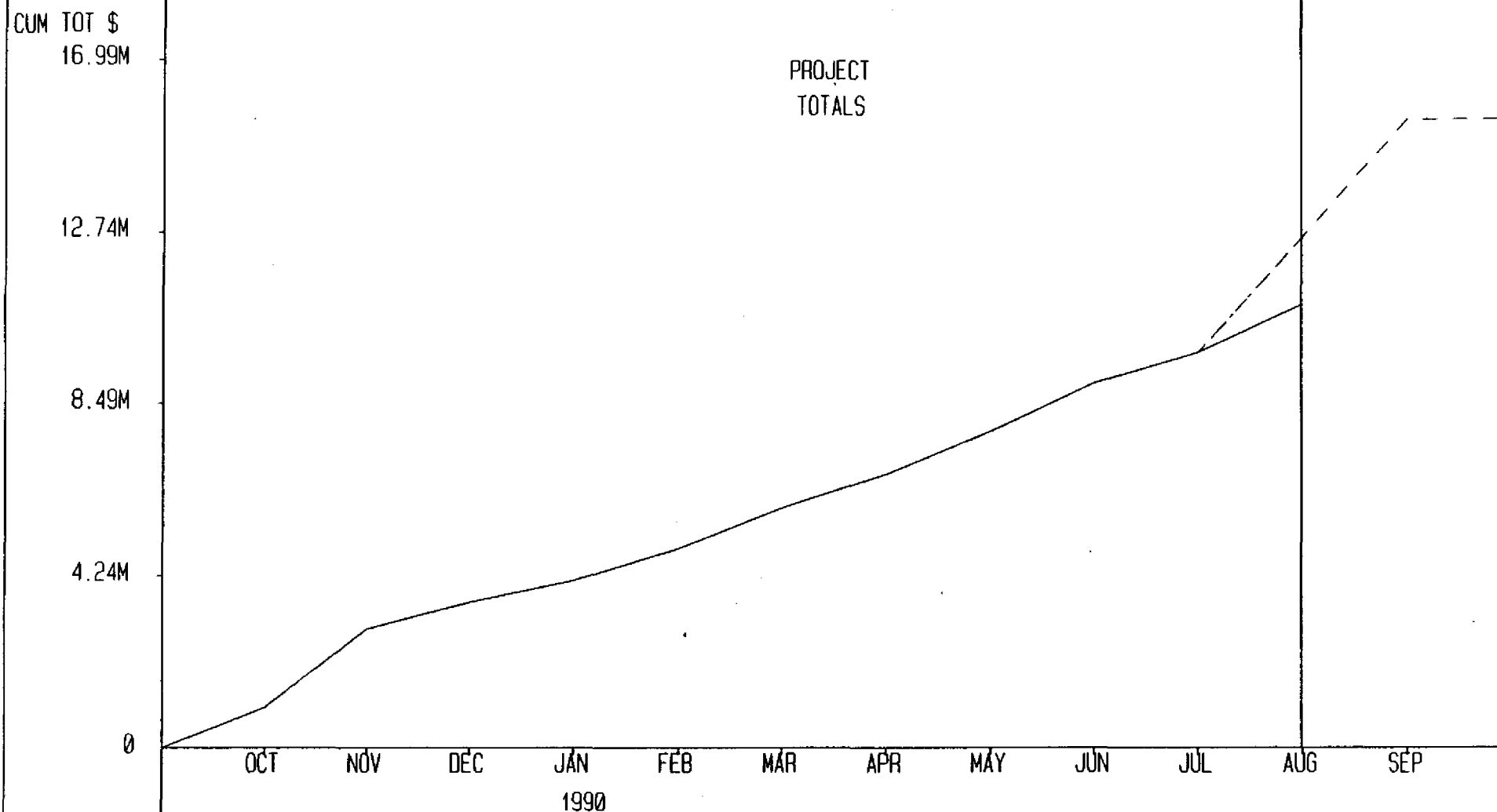
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PROJECT: SSC-LAB

TECHNICAL SERVICES

09-19-1990

19:24:01



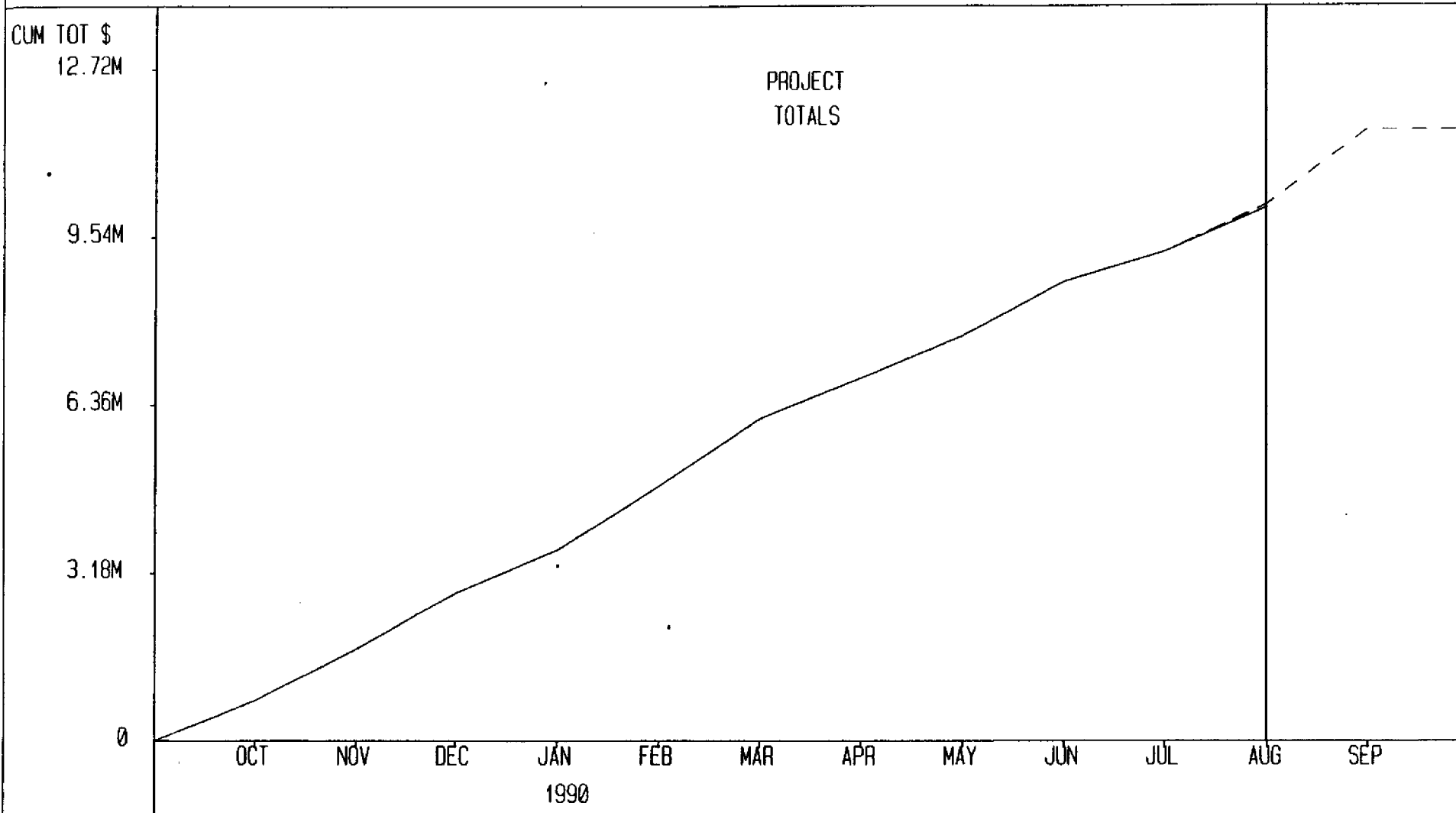
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PROJECT: SSC-LAB

ADMINISTRATIVE SERVICES

09-19-1990

19:27:18



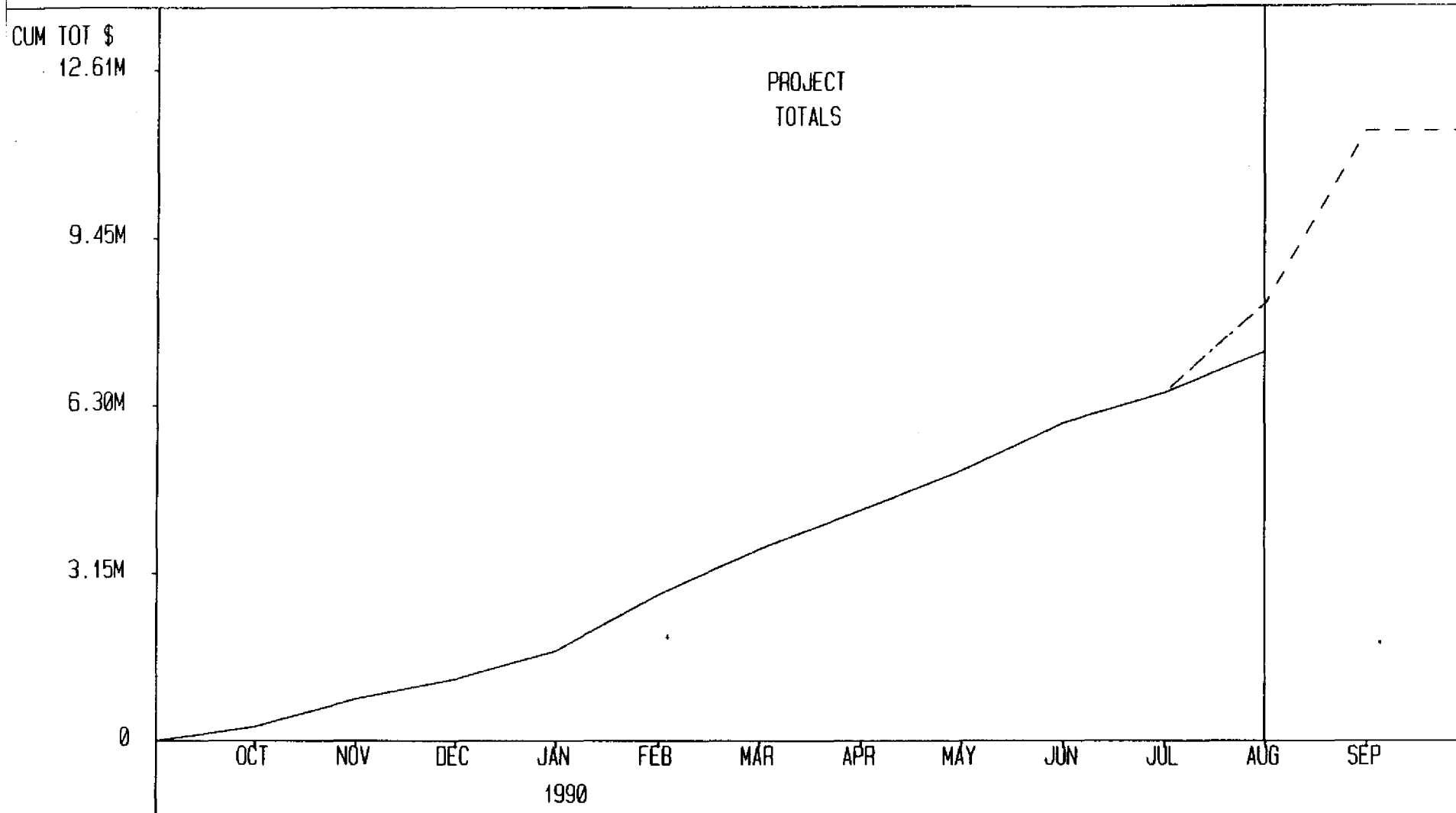
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PROJECT: SSC-LAB

PHYSICS RESEARCH

09-19-1990

19:30:40



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PROJECT: SSC-LAB

MAGNET SYSTEMS

09-19-1990

19:35:37

CUM TOT \$
76.70MPROJECT
TOTALS

57.52M

38.35M

19.17M

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	CV	0	0	0	0	0	0	0	0	-1	-1	9274K	

Table of Contents

Section	Page
Executive Summary	1
Technical Systems WBS 1.0.....	2
Accelerator Systems 1.1.....	2
Magnet Systems 1.2.....	2
Management and Support 1.2.1.....	2
HEB Magnets 1.2.2.....	2
Collider Magnets 1.2.3.....	2
Magnet Facilities Equipment and Tooling 1.2.4.....	11
Conventional Construction WBS 2.0.....	13
Conventional Construction Accelerator 2.1.....	13
Conventional Systems, Experimental 2.2.....	13
Site and Infrastructure 2.3.....	13
Campus 2.4.....	14
A-E/CM Selection & Contract Administration Support 2.5.1.....	14
Division Management & Administration 2.5.2.....	14
Project Management and Support WBS 3.0.....	16
Project Management 3.1.....	16
Project Management Office 3.1.1.....	16
Project Planning 3.1.2.....	16
Project Cost, Scheduling and Reporting Systems 3.1.3.....	16
Engineering Standards 3.1.4.....	17
Environmental Affairs 3.1.5.....	17
Systems Engineering and Integration 3.2.....	17
Systems Engineering (SE) Management 3.2.1.....	17
SE Support to ASD 3.2.2.....	18

SE Support to MSD 3.2.3	18
SE Support to Physics 3.2.4	18
SE Support to CCD 3.2.5	18
R&D, Pre-Operations, & Administration & Support WBS 4.0	19
Management Services 4.2.1.1	19
LINAC 4.2.1.2	19
LEB 4.2.1.3	19
MEB 4.2.1.4	19
HEB 4.2.1.5	19
Collider 4.2.1.6	20
Magnet R&D 4.2.2	20
Fermilab 4.2.2.1	20
Berkeley Lab 4.2.2.2	24
Superconducting Cable R&D 4.2.2.3	25
Brookhaven Lab 4.2.2.4	26
Project Administration and Support 4.3	27
Administration Systems and Support 4.3.1	27
Finance 4.3.2	27
Procurement 4.3.3	28
Personnel 4.3.5	29
Minority Affairs 4.3.7	30
Technical Services 4.4	31
Facilities Engineering Services 4.4.2	31
Materiel Management 4.4.3	32
Fabrication Shops 4.4.4	33
General Computing 4.4.5	33
Computer Operations 4.4.5.6	35
Project Design Support 4.4.6	36

Communications 4.4.7	37
Engineering Support/Standards 4.4.8	37
Metrology Lab/Calibration and Repair Labs 4.4.9	38
Staff Services 4.4.11	38
Technology Transfer 4.4.12	40
SSC Laboratory Directors Office 4.5	40
Physics Research 4.6	41
Library Services 4.6.1	41
Technical Information and Publications 4.6.2	41
Experimental Facilities 4.6.3	42
Experimental Systems WBS 5.0	43
Experimental Systems R&D 5.1	43
Detectors 5.2	43
Lab Operations Support WBS 6.0	44
Physics Program Support 6.1	44
Division Office 6.1.1	44
Theory 6.1.2	44
Experimental Physics and Facilities 6.1.3	44
Computing and Data Analysis 6.1.4	44

Executive Summary

Testing began at BNL on the latest full length collider dipole, DC0201, which has an "anti-ovalized" collar. It plateaued at short sample after conditioning and showed good field quality. Tests of the 1-meter quadrupole QSC-402 at LBL showed significant training, but at currents well above the design current. All quenches were on the inner layer pole turn, mainly in the lead side. Changes are being made in the assembly procedure, which are expected to reduce the training for the next quadrupole.

Requests for Proposals were being prepared for the acquisition of superconducting wire and cable and for the collider quadrupole magnets.

The Magnet Evaluation Lab is now fully operational and is being used for magnet vibration studies, the autopsy of DD0018 and other activities. The Magnet Development Laboratory's preliminary design is being finalized and a request for bids has been released to acquire the construction steel.

The Baseline Cost Estimate was finalized at \$8,245 billion, which includes FY88 and FY89 expenditures and is based on a 10-year schedule.

The Supplemental Environmental Impact Statement (SEIS) was delivered to DOE headquarters on August 10. Public hearings are scheduled for September 19 and 20 in Ellis County.

A letter subcontract was executed with PB/MK to provide A-E/CM services while the final subcontract is being negotiated.

The procurement of a UNIX server is underway, with a view to making UNIX the standard operating system for computing at the SSCL.

The revised Site Specific Conceptual Design Report (SCDR) and the SCDR Executive Summary were printed and distributed. A public reading room has been set up in the library to allow public access to documents like the SCDR and the SEIS.

Seventy new employees joined the Laboratory in August, bringing the total number of employees to 757.

Technical Systems WBS 1.0

Accelerator Systems 1.1

(SEE SECTION 4.0 - R&D, PRE-OPERATIONS, AND ADMINISTRATION AND SUPPORT)

Magnet Systems 1.2

Management and Support 1.2.1

A formal design review was held for the Fermi National Accelerator Laboratory (FNAL) 50mm long magnet cryostat design on August 29-30. Formal minutes are in the process of being prepared for release. A total of sixty-six action items resulted from the review requiring extensive follow-on effort. A second FNAL 50mm long magnet cryostat Preliminary Design Review (PDR) will be scheduled in December or January prior to the start of prototype build. A PDR for the 50mm long magnet cold mass is scheduled for October 17-18 at FNAL.

A technical interchange meeting was held on August 28 to review and close-out action items generated during the FNAL short magnet design review. Minutes of this meeting and disposition of action items are being prepared for release. Approximately six action items remain open and require additional effort.

Considerable effort has been devoted to the development of a statement of work (SOW) and annexes for the acquisition of a full scale engineering development for the collider quadrupole magnets (CQM) and other special quadrupole magnets (SQM). The draft of this document is planned for release in early September.

Request for Proposal (RFP) preparation continued for the acquisition of superconducting wire and cable, and the CQM and SQM. A draft RFP is planned for release early September.

Revised staffing plans have been developed and are being coordinated with the recruiting office to ensure proper emphasis on engineering staffing needs.

Annual performance reviews and salary adjustment recommendations were completed for all personnel within the engineering group.

HEB Magnets 1.2.2

Acquisition strategy is being revised by the Product Manager.

Collider Magnets 1.2.3

Test

In August, the most recent full length dipole, DC0201 (new numbering scheme), began its test cycle at Brookhaven National Laboratory (BNL). DC0201 is a 40mm aperture dipole magnet of the baseline design with a variant of the collar design dubbed 'anti-ovalized'. This design reduces the vertical distortion of the coil assembly which occurs in the collaring process and results in a less oval collared coil, closer to the nominal round geometry. Reducing the vertical distortion reduces the interference between

the coil and yokes. After cooldown, the differential thermal contraction between the iron yoke laminations and the stainless steel collars results in a somewhat reduced clamping of the 'anti-ovalized' collared coil by the yokes compared to the 'ovalized' version.

DC0201 was initially cooled to 3.5K and conditioned to 6800A on three current cycles. It was then quenched at 4.35K and had four quenches at about 6790A, the approximate limiting current predicted by short sample measurements. A series of magnetic measurements were performed prior to initial quench testing and immediately following. These included axial scans of field harmonics and NMR and Hall probe scans of the field strength.

At Lawrence Berkley Laboratory (LBL), the second of the current series of 1m long model quadrupole magnets, QSC402, was tested. The magnet was tested at 4.3K without prior conditioning; the initial quench was at 6346A, followed by a second quench at 6601A. QSC402 then exhibited slow training up to currents above 7600A. While the performance of QSC402 was not as good as its predecessor (QSC401 nee QC-1), except for the critical quench, the training occurred at currents well above the operating point of 6500A. Analysis of the quench data is in progress.

At FNAL, the schedule for 40mm dipole tests in FY91 has been under discussion. Preparations are now underway to complete tests of magnet DD0027, presently mounted on a test stand, and the installation and test of magnet DD0028. These magnets will be tested upon completion of the current FNAL 'low beta' quadrupole test period. Following DD0027 and DD0028 tests, the first full length 40mm dipole fabricated at FNAL, DC0302, is scheduled to be installed and tested.

Development equipment for the Magnet Test Laboratory (MTL), including the MassComp computer, has been moved to the Test Group Laboratory area in Building #2. An eight-user license has been installed on the MassComp.

The DVX 2502 is being evaluated as a VME alternative to the LeCroy 8212 data logger. Analytek/Tektronix has also provided a quotation and specification for a (lower cost, lower performance) 2032LC system. This system is adequate for MTL requirements and is also of interest to Fermilab.

A revised isolation amplifier specification has been completed. The best development approach appears to be to pursue fabrication in coordination with the Accelerator Systems Division's Electrical Systems group. The specification has been reviewed internally; a final specification, suitable for MTL and Accelerator usage, will be ready in about one month.

Evaluation of software to create user interfaces for X11 continues. This software will be used for data analysis and operator communication. Trial versions of DataViews and Exocode have been received. DADisp and PV-Wave have been ordered.

System work on the server, "grumpy", continued. The optical drives now work under SunOS version 4.1. X11R3 is running with the MIT patches. We began installation of two 1.2 gigabyte disk drives.

A preliminary functional requirements specification for the MTL building has been written and circulated for comment. The RTK design report for the initial design of the MTL, Accelerator Systems String Test (ASST), and Prototype Installation Facility (PIF) control room has been received.

A representative visited the magnet test facility at DESY for one week to learn about their material flow, building layout, control software, instrumentation, etc.

Work continued on the MagCom database and development of the UNIX workstation network in August.

The format for superconductor wire strand ID was finalized and written up as QA document 1211-RQA-0016. A description of the ID is also available over DecNet in the MagCom general information account - SSCVX1::USER2:[MAGCOM.DOCS]WIREID.

Revision of the menu system and summary reports for the strand and cable data have been completed.

The BNL long dipole coil measurements are being added to the database and to the menu system. The user can now specify a coil ID range to be displayed in the menu-accessed reports. Quench test summary results (one data row per test) have been added to MagTest, a developmental database presently accessible only through the Sybase data workbench.

A prototype design for a new database structure, to incorporate a data record serial number generator for internal use, automatic history logging of data changes, and the use of Sybase triggers for referential integrity of component IDs has been started.

Development of documentation on how to access our server 'grumpy' and the database menu system from other computers, including Macs and PCs, so that everyone will be able to look at the data from their favorite computer, is in progress.

Preliminary studies of the Mac 4th dimension database system, and ways to export the LBL cable and coil data in a form that can be imported to our Sybase database system, are underway.

Meetings were held with representatives from other Magnet Systems Division (MSD) sections to begin specification of data that must be reported to central database during magnet fabrication.

Engineering

A preliminary design review has been scheduled for the LBL Quadrupole. This review will be held at LBL on October 10-11 following the MSIM. An agenda has been issued.

A similar preliminary design review is being planned for the BNL 50mm program.

3-D analytic magnetostatic coil end code has been completed. Additional efforts to modify the code will be performed to permit field harmonic optimization for end effects.

A simple persistent current code developed at SSC and the SSCMAG04 code has been migrated from LBL. Evaluation of engineering computing needs for the next two fiscal years has been completed. Sun SPARC stations are being procured for use by the engineering staff. Existing Macs will be transferred to those individuals not performing finite element analysis or modeling.

The 50mm dipole inner lead end design will be completed by September 24. The orders for all the parts have been placed with Texas Instruments. While there is hope that all the parts can be obtained in time, a parallel fabrication effort is on in FNAL for covering the first few short magnets.

A set of quench heaters, with photoetched heaters and a continuous strip heater is being obtained through a Fort Worth firm and will be tested on a 40mm magnet. A similar test but with a higher resistance value, which meets collider needs, will also be tried on a different magnet.

A thermal model of the quench heater has been analyzed and heat flux calculations have been made for the BNL heater design. Further work, including Helium effects, is being carried out.

A proposal to measure quench velocity in a long conductor sample in a test Dewar available in MIT is being put up for approval. This test will determine the role Helium plays in quench propagation, the understanding of which is crucial to the 50mm design.

Discussions are continuing on the objectives and methods in obtaining an ASME or other safety code for the cold mass of the dipole. Minutes of the meeting and conclusions have been circulated. The immediate action of requisitioning the services of a consultant has been undertaken with a request for quote issued to five qualified firms.

The first trial of building a 3-D model on Unigraphics and transferring the geometry to ANSYS through GFEM was only partially successful. The geometry (tooling design) failed to have connected nodes in different parts. This is being followed up.

Analysis of SSCL collaring tooling was carried out in 2-D geometry and results show a satisfactory design. The 3-D geometry build through Unigraphics (above) will be worked on further.

A 3-D Tosca model of the coil ends has been built using a new non-standard technique of modelling by bricks and gives good answers. A detailed 40mm dipole investigation is expected to be completed in about a month, after which the 50mm design will be investigated.

A detailed investigation of friction effect at the skin at the magnet end is being carried out; initial results show that the peak stress is significantly enhanced.

The temperature distribution due to volumetric losses (e.g., AC losses) has been carried out and the results are much more favorable than given by one dimensional calculations.

Work has begun on modelling the cooldown rate effects on cold mass stress distribution.

Mechanical Design and Analysis

Work is nearing completion on a 20mm collar CDM magnet design which provides more margin, the same transfer function, and more support for the coils. The yoke is a vertically split design with aluminum bars for lower warm prestress. Plans are continuing for developing our future winding machine, collaring press, and workshop.

Several CQM designs have been proposed, including 40, 46, and 50mm designs. One design has no wedges to permit faster construction. The results on synchrotron radiation from the Snow Mass conference suggests that a 50mm design is needed to support a 20K shield. The final aperture size will be determined through the detail design process with the CQM subcontractor's involvement.

Interconnect Region and Bus Assembly Design

Work continued on the CAD model of the dipole - dipole cold mass interconnect region. The model is now nearly complete and the drawing tree is being finalized.

The order for the plastic mockup of the interconnect region was placed and we are expecting delivery in late September. This model will be a visual aid to supplement the CAD effort in the interconnect region.

We received some preliminary splice joint resistance measurements from MIT. For a 10cm-long soldered overlap, the resistance is in the range of 0.5 nW at 4.2K and a magnetic field in the range .2 - .5 T. The method used by MIT was to make a 1-turn coil of inner layer conductor, induce a current in it by a collapsing magnetic field, and measure the time constant of the current decay with a calibrated Hall probe. The joint resistance is then calculated from the known inductance. These numbers are encouraging.

Several models of beam tube sliding joints will be made by us and evaluated in conjunction with Accelerator Division personnel. The first model will be a LEP-type joint which is slotted, and two others will have no slots.

The draft bellows testing specification was sent to three testing vendors for comment. One of the three, LTV, sent four people to obtain clarification of several areas. The meeting resulted in several changes being made to the specification. As mentioned last month, the bellows to be tested will be added to the FNAL order for the bellows needed for the string test. Our intent is that these results will give some initial information on lifetime distributions that will be used to refine our testing requirements for the large number of bellows to be used in the ring installation.

Materials Engineering

The insulation test fixture design, which will simulate the 50mm dipole inner coil cross section, is nearly complete and drawings will be released to procurement in early September. Procurement was held up because of design changes that needed to be made after an informal review of the preliminary drawings.

In order to apply the required large loads to this fixture, a hydraulic load frame has been ordered which will apply up to a 200 kip force. This machine will supplement the 50 kip testing machine. Floor space is tight in the MEL, but a spot for the load frame has been identified. Delivery of the load frame is expected in late September or early October.

Work continued on the test in which 18-inch lengths of collared coils are repeatedly plunged into LN and then warmed up to room temperature. Two types of insulation are used, the standard SSC with epoxy prepreg, and the experimental "all Kapton" cross section with the Dupont adhesive. We will compare cross sections of these two types, along with control samples of each that were not thermally cycled, to determine if there is any thermally-induced degradation in the turn-turn epoxy bonds, and other abnormalities. We have thus far completed 25 of the required 50 thermal cycles.

Informal discussions were held with various SSCL personnel, in both MSD and the Accelerator Division, to determine a proper course of action for our NDT effort. Development of inspection techniques is required for the following areas: weld joint inspection, bellows inspection (both starting material and finished product), beam tube inspection, and cable inspection.

As directed by the task force, we started the development of a split beam-type load cell transducer that will measure the pressure on the inner and outer edge of each layer, rather than the average load as in case of the present transducers. We will make use of the BNL and FNAL experience and expertise in this work.

Engineering Laboratory

A request is being evaluated to accelerate the development of a field measurement system so that it is available by April, 1991. The freeze on hiring and consequential manpower considerations may push the date out some.

The development team working on the short magnet test facility met with representatives from the magnet test group and with the electronics group from the Accelerator Division. The groups are exploring the common requirements of all the various systems under development in an effort to reduce redundant development work. The first meeting focused on the power supplies and the problem with power factor requirements levied by the power company. This issue will continue to be worked on but it is not likely that the operational power factor will be any better than .8 at best. The present specifications being put together for the high current supplies were also examined for commonality.

Cable Test Facility Development

The Cable Test Facility dewar RFP is in its final stages of preparation and has been modified to include the requirement to build vessels to ASME code.

The swaged sample holders with solid shims, are now under test at BNL and scheduled to be completed by early September, with a report of the test results to follow. Planning for the remaining components, the sample test assembly and sample prep equipment, is being prepared.

Short Magnet Test Facility

The preliminary specification for the data acquisition node of the distributive control system for the short magnet test laboratory has been completed based on the conceptual design review. This system is to be VME bus based consisting of four sub nodes, voltage tap digitizer, strain gauge digitizer, temperature monitor, and current monitor. The voltage tap digitizer is not an off-the-shelf product and will be a combination of in-house development and vendor supplied VME equipment modified by them to meet our needs. The strain gauges, temperature monitor, and current monitor can use off-the-shelf products with an in-house analog front end.

A system software engineer was hired who will lead the development of our software and network requirements. The hiring freeze has prevented filling of the final engineering position in the team and we do not have any candidates under active consideration. The hiring of development technicians has been placed on hold pending FY91 budget finalization.

Cryostat Design

Work continued on our task to support determination of requirements for MTL feed-cans and return-cans for production magnet testing and R&D activities.

We continued design of the cryostat for collider quadrupole magnets and completed drawings of the reentrant post assembly and the vacuum vessel assembly. The drawings were released to the Production

Group for hardware acquisition. Drawings of the cradle assembly, tie-bar assembly, positioning plate and tow plate are in work. The contract with Materials Research & Engineering, Inc., Boulder, Colorado for load and thermal cycling tests of hardware corresponding to the support posts for the 40mm aperture dipole magnets is progressing satisfactorily.

Studies and tests of magnet support and cold mass alignment techniques continue. Work on the stretched wire alignment technique continues at FNAL and the design and acquisition of components for the optical alignment bench at SSCL continues.

Advanced signal processing tests on the spectrum analyzing system are yielding results in a reliable and consistently accurate manner. Development of the ANSYS model of the 40mm dipole continues so we can compare experimental and analytical results from the magnet vibration program in support of model validation.

Efforts continued on conceptual design of thermal shield bridges and MLI in interconnects. We improved the design of the thermal shields and staggered the 20K and 80K bellows in order to avoid interferences and we continued efforts to validate the Integrated Thermal Math Model for 40mm dipole magnets.

Quench Program

Work continues on development of a quench modeling program that will bring together more factors in the model than previously has been used. A quench analysis working group meeting was held August 16.

Computer-Aided Design System (CADS)

We created 3-D wireframes of component parts for the CQM Slide Cradle Assembly and 40mm Reentrant Post, developed the 50mm magnet cross section, and developed numerous viewgraphs of magnets for DOE review presentations by MSD staff.

The purchase requisition to permit microfilming of documents for the CDM RFP is in process. The MSD Optical Disk Acquisition Plan is being reviewed. Development of a CAD drawing depicting true cable positioning for the 50mm coil wrap is continuing. Detail drawings of the latest design for the CDM elliptical collar lamination have begun and preparation of detail drawings of graphite tubes for the CQM Reentrant Post continues. 3-D wireframe drawings of the Quad Slide Carriage are in process.

Sixty-six drawings have been sent to configuration management for review and comment by MSD Engineering, Production, Quality, etc. The drawings and specifications, which will be sent to the CDM RFP vendors, are being identified and will be microfilmed when procurement gives its approval.

Work continues on the preliminary design of the Quad Reentrant Post and is approximately 85% complete. The preliminary design phase of Quad Vacuum Vessel, which will include two separate designs, has started. We created a drawing of the proposed Quad Vacuum Vessel with required tolerances which will be sent to vendor for quote.

We continued Dipole-to-Dipole Interconnect design effort and created a 3-D solid model.

We received 72 new drawings which were forwarded to Systems Engineering for engineering review board distribution within MSD.

We delivered CDM RFP drawings, specifications and DOE Orders to a microfilm vendor for processing and continued the scheduling effort for the Engineering Group in support of the Magnet Development Plan.

FNAL CAD Support

Work continues on Reentrant Posts (Inner and Outer Tubes) and continues on Vacuum Vessel designs.

Work continues on the Reentrant Post Assembly drawings and on the drawing development for the Inner and Outer 80 MLI Blankets.

50mm Dipole Cryostat drawings were completed for the Vacuum Vessel assembly, Post Support and Port Anchor Screw (Post) as was design of Return End Clamp assembly.

We continued work on the 20K Shield Slide Ring, Shield Extruded Helium Tube, and Interconnect Bellows and on the drawings for the Vacuum Vessel assembly, Port Support, Foot Support Pad and Foot Support Gusset for the CDM Cryostat.

Interconnect

Progress continues on the Interconnect design. Layouts on the Domed Cap, End Plate and Beam Tube are continuing in development. The Assembly Lead End, Block Mounting, Terminal Quench Protector, and Plate Lead End drawings are 50% complete.

Work continues regarding shielding design concepts. A conceptual design for a 4-way connector is in process. Various models were generated for evaluation.

Tooling Design Support

Work on an alternate design for the Compression Test Fixture continues.

The Calibration Fixture drawings were completed. A new design concept was created for the Press Fixture which is self-contained in order to keep the liquid helium from boiling over.

Efforts to develop detailed parts for the Transducer Calibration Fixture are continuing.

Work continues on the tooling requirements for assembly of Yoke Packs.

Development of drawings for the collaring press continues.

Detail parts drawings of the Material Test Tooling fixture are 90% complete and assembly drawings are in process. Revisions continue on the Alignment Support drawing.

Systems Engineering

Specifications/Analyses

The March, 1989 version of the CDM Prime Item Development specification was forwarded to industry with the dipole magnet RFP. An updated version is available and will be provided to the subcontractor upon contract award.

The CQM Prime Item Development Specification was completed in preliminary form and was provided for inclusion with the Quadrupole RFP.

A white paper on the subject of magnet alignment tolerances was completed in draft form and will be coordinated within MSD prior to distribution.

Systems Engineering supported two days of meetings on the subject of alignment and survey. Information gained during these meetings will be used in development of the Interface Control Document (ICD).

Work was begun on development of an "A" level specification for the Collider Dipole superconducting magnets.

Work on an "E" level materials specification for magnet yoke laminations steel was initiated.

Systems engineers participated in a week long workshop on use of the Automated Requirements Traceability System (ARTS). This system will be used to track the flow down of requirements through the various levels of specifications to final qualification and acceptance testing.

Reliability Engineering

The Failure Modes, Effects, and Criticality Analysis effort for the CDM is nearing completion in draft form.

A reliability engineer visited BNL for the purposes of receiving an on-site orientation and discussing reliability issues regarding the dipole magnet design.

The Magnet Division Reliability Plan was completed in draft and is undergoing internal review.

Reliability engineering prepared and presented briefings on availability and failure modes, effects and criticality analysis at the August 29 - 30 cryostat design review.

Configuration Management

The waiver and deviation procedure has been signed by the division head and it was briefed at the MSD section leaders meeting.

The formal document release and "for information only" document review procedures were drafted in final form and provided to the MSD staff for coordination.

Magnet Facilities Equipment and Tooling 1.2.4

Efforts leading to the development of a cable and short magnet test facility continue. The development plan and schedule includes a discussion of the efforts leading to the prototyping and operation of a short sample cable test facility and a short magnet test facility. Assessment of the approach for procurement of a cabling machine and its location continues.

Magnet Evaluation Lab (MEL)

The MEL is now fully operational and is being used to support the following activities:

- DD0018 autopsy
- Magnet vibration studies
- Fabrication of controls of LBL's 5M curing press
- Collared coil thermal cycling study
- Assembly of model magnet tooling

Progress has been made on the design and procurement of cryostat equipment and tooling.

Hypot tests were performed on the upper and lower outer coils of DD0018 to acquire more information about the dielectric strength of the kapton/pre-preg insulation. Voltages between 750 VDC and 2000 VDC were applied to adjacent return end windings of the long segment of collared coil at 250 VDC increments. The results of these tests were that a short was induced in winding #17 of the lower outer coil at 2000 VDC, and no other indications of insulation breakdown occurred. A time domain reflectometry test is scheduled for September 7 to attempt to find the location of the short induced during the hypot tests. The collared coil will then be disassembled to look for physical evidence of the short in the lower outer coil. Analysis and disassembly of DD0018 will be completed by September 28.

Magnet Development Lab (MDL)

Parts for the 17M skinning press have been received and warehoused. Parts are being shipped to LBL to accommodate their request for a 20-foot section of this press.

Inspection trips to Lynn, Jackson, Weldon and Miether have taken place to date on the skinning press parts.

Mechanical design of the dipole collaring press is complete and procurement initiated.

Mechanical design of the model magnet coil winder is complete and procurement initiated. The cable tensioner has been ordered and parts are being delivered. Requisitions for all necessary controls have been submitted.

Model magnet curing press design is in process with the long lead items completed and RFQ initiated. The heat transfer system has been ordered with delivery promised in November.

Mechanical design of the quadrupole model magnet collaring press is in process.

We are continuing efforts to award a contract for design and fabrication of a 17M coil winder. Contract award has slipped again and is currently promised by September 17.

We received a quote for the beam tube wrapper from AFA Industries. All other vendors declined to bid. Based on the results of a vendor survey, a recommendation to place the order with AFA will be forwarded to Procurement.

A & E efforts continued to finalize the preliminary design of the MDL. Weekly working group meetings held both at SSC and CRSS in Houston continued to resolve cost and functional design questions.

Layouts of the peripheral shops were completed and utility requirements for equipment was forwarded to PB/MK. Costs are still a major item to be resolved. The cost estimates from CRSS need to be scrubbed by PB/MK and the Conventional Construction Division (CCD).

The first firm bid on construction, the steel package, is scheduled to be opened on September 4. This will be our first look at actual costs. Meetings are scheduled in September to firm up final estimates.

LBL, FNAL and BNL Support

Efforts to complete the controls for LBL's 5M quadrupole curing press have been slowed by defective purchased hardware and software. Target completion is now the end of October.

The concept for designing a collapsible mandrel used to assemble coils prior to collaring was established using a design similar to an existing DESY system.

The design on 40mm tooling has been modified to incorporate 50mm requirements. Affected tooling is a cold mass skin lifting fixture, collared coil lifting fixture, and cold mass and cryostat lifting strongbacks.

Various vision tracking systems for the automatic welders on the skinning press are being investigated.

First article inspection of a continuous 60-foot long cold mass skin was witnessed at Teledyne Metal Forming. Four skins are scheduled to arrive at FNAL by September 9.

Conventional Construction WBS 2.0

Conventional Construction Accelerator 2.1

Injector

Programming for the Linear Accelerator (LINAC) and LEB continues. Incorporated into this work was the beginning of detailed CAD modeling of the tunnel technical system structures and supporting systems. This work will help to clearly define functional requirements of the supporting conventional enclosures and systems.

Collider

Programming for the collider continues. Underground machine enclosures in the collider are being modeled on CAD and outfitted with conventional and technical system components. In addition, a collider tunnel cross section tolerance diagram is being developed which considers construction tolerances and survey tolerances. This work will help to clearly define functional requirements of the supporting conventional enclosures and systems.

Three workshops were held during the month of August which addressed survey, shafts, and geotechnics. These half-day workshops were conducted to allow communication of information between the SSCL and the A-E/CM.

Conventional Systems, Experimental 2.2

Input to the first draft of the Experimental System Resource Requirements Report was provided to the Physics Research Division. A report on the availability and cost of heavy lift system was completed, and a report on transporting large pieces of detectors from the Gulf to Waxahachie was completed.

Site and Infrastructure 2.3

Surface Transportation Study

The access route and bridge inventories were completed.

Utility Requirements

Meetings were held to introduce A-E/CM to appropriate contacts with the various utility supply companies, coordinated through TNRLC. Definition of the E-1 area program is under review. E-1 area infrastructure requirements will be developed once the E-1 program becomes fixed.

Real Estate

FY91, Phase II—Work with TNRLC continued regarding acceptance of improvements on real estate to be acquired and conveyed to DOE. A review of "fee simple" requirements was conducted with a draft response for Project Management to send to DOE.

Campus 2.4

Programming criteria for space and equipment (utility) lists continues on the design of the ASST and the MTL and their respective housing of cryogenic systems in compressor buildings. Programming requirements are developing in greater detail for the structure's associated cryogenic systems, technical systems, and surface facilities on a functional area by functional area basis. The ASST structure, as currently envisioned, will consist of a surface structure approximately 200 meters in length, in which strings of magnets can be assembled and tested. It will share surface facilities which will subsequently be utilized for the E-1 site to support the collider ring. Based upon cost modeling and personal safety issues, the envelope of the string was determined to match the 12-ft inside diameter of the tunnel. Site configuration of surface facilities is currently being analyzed for final schematic configuration. This process requires detailed analysis of infrastructure loads at E-1 and siting of these and future facilities which must interface at short distances with cryogenic systems (i.e., accelerator shop building).

Architectural space programming of nontechnical campus administrative and support facilities was finalized based upon the January, 1990 population baseline.

A pre-master planning effort has begun, denoted as the West Campus concept site plan, which will be an in-house effort from which to launch the A-E/CM in master planning integrated with the initial build out of the E-1 site. Numerous in-house presentations have been made to SSC management and TNRLC. The final document is due out September 31.

Technical clarifications continued prior to negotiating the first 27 months of work with the A-E/CM.

A-E/CM Selection & Contract Administration Support 2.5.1

A-E/CM progress this month consisted of orientation and familiarization activities under the cost incurrence letter.

Division Management & Administration 2.5.2

Priority was given to pre-negotiation activities in preparation for A-E/CM contract negotiations with the PB/MK Team, and to developing the 180-day Letter Subcontract which was forwarded to DOE for approval. Approval was received and the letter contract executed on August 17. The PB/MK Team continued orientation and familiarization activities under the cost incurrence letter agreement.

Weekly coordination meetings are held at the A-E/CM offices involving senior leaders from DOE, TNRLC, SSCL, and PB/MK. Initial discussions have centered on the facilities at the E1 area, particularly the Magnet Development Laboratory (MDL).

CCD commenced an update of the Conventional Construction Procedural Guidelines, issued as an advance draft in May. Development of procedures were begun for establishing computer linkages (data, drawings, documents) between CCD and the A-E/CM, tied in with the emerging SSCL document control system.

Development of the West Campus Concept Plan continued, and CCD management review clarified the programmatic guidance for E-1 site facilities. Design services commenced on the MDL.

A permits coordination committee was established to expedite the permit process and assure timely attention and response are provided.

SEIS Support Management

CCD has attended meetings regarding the SEIS comment period and schedule.

Additional report copies were prepared for placement in SEIS reading rooms.

Project Management and Support WBS 3.0

Project Management 3.1

Project Management Office 3.1.1

The impact of GR-H sequester has been assessed and discussed with DOE/OPO. In summary, if the full sequester is implemented we estimate an approximate one-year delay in the completion of the string test (ASST).

The funding profiles to support the baseline of \$8.245 billion (10-year construction schedule) have been completed and forwarded to DOE/OPO and DOE/OSSC. The details of this estimate incorporate the changes discussed and made since the June, 1990 review. Also included in this estimate are the funds expended in FY88 and FY89.

The first DOE monthly management meeting was held this month. In attendance were representatives from DOE/OSSC, DOE/OPO, SSCL/Project Management Divisions, and SSCL/Administration Division. Major items discussed included the FY91 Budget (with all sources of funding), FY90 remaining funding, magnet status, accelerator systems status, ASST status, and the status of the conventional construction.

Project Planning 3.1.2

The baseline cost estimate was finalized at \$8.245 billion, which includes the identified errata list items and FY88 and 89 expenditures. WBS changes have been incorporated, and this information has been placed on the computer network. Funding profiles for both the 9 and 10 year schedules were also prepared, however the baseline schedule is for 10 years. The group continued to work on back-up information for the OMB review, as well as preparing additional cost estimate comparisons showing how realistic the information is, and how it compares with other historical costs. The funding profile for Capital Equipment has been completed, and a form for "SSCL Baseline Change Documentation" has been developed for internal and control purposes. The Value Engineering Procedures Plan and the SSCL Davis-Bacon Committee Plan have been finalized, and information is being collected for input into the Cost Estimating QA Plan. Analysis of the manpower loading of the magnet manufacturing flow chart continues, and the estimators have also supported the Magnet Division on the MEL, MDL and model magnet schedules.

Project Cost, Scheduling and Reporting Systems 3.1.3

The 10-year schedule has been revised in support of the Certificate of Executability and the data has been loaded into the schedule. A draft schedule specification for interfacing with SSCL divisions and subcontractors was developed, and the initial test was successful. The preliminary coding structure is now being tested. Meetings have been held with PB/MK on their estimating and scheduling processes and procedures, and the preliminary cost account plans for their FY90 effort have been prepared. A draft Business Practices and Procedures Plan has been developed for use as a template by divisions, and background information on the development of the Cost and Schedule Control Systems Criteria (CSCSC) systems manual and guides was given to Laboratory Technical Services (LTS). The dipole acquisition strategy documentation and the dipole RFP have been reviewed for CSCSC compliance and implementation issues. A meeting was also held with TNRLC to discuss CSCSC tools. It is the

TNRLC's intent to utilize the same systems tools for their reporting requirements. The PCSR PC server has been delivered and installed to support FY91 scheduling and CSCS integration and processing.

Engineering Standards 3.1.4

The recently developed document tracking system (DOCTRAK) has been demonstrated to groups within the laboratory for their comments. This system will be available by the end of September for use by Mac users. Work has begun on developing a standardized drawing change notation/file notation procedure for use in document control, and the Sun workstation for the document control center has been ordered. Members of the Engineering Standards group visited California the last week of August, visiting several sites to discuss software, configuration management and document control systems. F. Rydeen has also been serving on the committee chartered by R. Briggs to study MIS issues at the laboratory.

BNL was visited in order to review the status of their QA activities. Their procedures and practices developed for magnet construction and R&D, if followed, are adequate. Implementation of the procedures should be a management priority. A status report on QA at the SSCL was given to the project leaders on August 14. A QA management review was held this month with each of the SSCL divisions to determine the status of their QA plans. Work is continuing on the QA video, with the script complete and videotaping underway. Portions of the PM Quality Manual have been finalized and loaded onto the project management server for review and comment, while work is continuing on other portions of the manual.

Environmental Affairs 3.1.5

The SEIS was delivered to DOE-HQ on August 10. Additional comments from C. Bergstrom were incorporated, and the EPA Notice of Availability was published in the August 24th *Federal Register*, beginning the 45-day mandatory public comment period. A public hearing planning and comment resolution workshop was held in DOE-Germantown August 29. The hearings are scheduled for September 19 (Waxahachie) and September 20 (Ennis). In addition to the moderator, three people will be on the stage -- Tom Baillieul as the SSC SEIS Project Manager for DOE-CH, a DOE SSCPO representative (Cipriano or equivalent) and an SSCL representative (Briggs or equivalent). Additional staff from these organizations will attend in order to hear comments first hand and provide advice as appropriate. A briefing is scheduled for September 18. Work is continuing on the Programmatic Agreement with the Texas State Historic Preservation Office, and the Historic Advisory Council and TNRLC are currently reviewing the draft document. An interim report from SMU on the archaeological resources found on SSC property will be submitted in mid-September.

Systems Engineering and Integration 3.2

Systems Engineering (SE) Management 3.2.1

The Configuration Management Plan has been revised to a shorter, condensed version. Examples of organization and approval of technical specifications and their relationship to the Project Management Plan and Configuration Management were developed and worked with top management. Effort has been spent addressing the issue of the Lockheed Corporation bidding on jobs other than Systems Engineering at the laboratory. A meeting was held with legal counsel and Lockheed officials in Houston, resulting in the decision that each issue will be reviewed on a separate basis. Training classes for the Automated Requirements Tracking System were held. Cost data for Systems Engineering Support for both FY90 and FY91 were prepared.

SE Support to ASD 3.2.2

Top level schedule development work has been continuing, and ASST milestones and schedules have been updated. A schedule has been developed for the collider installation down to the half-sector level. The development of a Spool Piece Project Plan is also underway to explore solutions to the delivery date problem presented by strict adherence to the Procurement Acquisition Process Schedule. Tables of physics parameters have been added to the specification notebook down to the segment level.

SE Support to MSD 3.2.3

The preliminary CQM specification has been completed and will be included in the RFP. A priority effort is underway to put together the requirements for the collider superconducting magnet systems specification. The waiver and deviation and formal document release procedures has been coordinated and signed, with other procedures still being formulated. A second draft of the MSD reliability plan was completed. Following several workshops and meetings, a white paper on the subject of alignment and survey has been completed, and is now being coordinated with the ASD.

SE Support to Physics 3.2.4

Selection of the hardware and software for the Solenoidal Detector Collaboration information handling system is essentially complete. This systems, developed jointly with Project Management and Physics Research, has been expanded to provide the same capability for the laboratory. The details of support and training, and the acquisition plan are being developed. A working group on MIS requirements for the division has been formed and will present its report to the Associate Directors in early September.

SE Support to CCD 3.2.5

The outline for the CCD Procedures Document was reviewed, and comments relating to Systems Engineering issues provided. The collider ring elevation data file was reviewed with the Technical Director and a meeting was held with P. Nelson, who will prepare the summary for the report. Information on ICWGs has been prepared for presentation to the A-E/CM. The charter for the Controls Requirements Task Group was reviewed and work is continuing to identify and document the operational requirements for the collider.

R&D, Pre-Operations, & Administration & Support WBS 4.0

Management Services 4.2.1.1

The major concern this month continued to be staffing plans and hiring. We believe that the Accelerator Systems Division/Systems Integration Group will have to hire about 250 people during FY91. There were 160 people on board as of August 31, and our goal is to hire about 50 more people this fiscal year.

Efforts are being concentrated on compiling project plans for the ASST. Group leaders have been asked to support development of detailed planning including hardware, software, cost and schedules detailing the Accelerator Division's support of the ASST facility. Top level milestones were developed with Helen Edwards. The division leaders for Magnets, Accelerators, and CCD are developing schedules to support these milestones.

LINAC 4.2.1.2

The codes PARTRACE and CCLTRACE have been modified to evaluate the effects of misalignments and field errors in the SSC drift-tube linac (DTL) and coupled-cavity linac (CCL), respectively. The typical alignment and control accuracies can substantially enlarge the fraction of the accelerator bore used by the beam. We want to minimize the accelerator bore to keep the rf power requirements down, but we also need to avoid significant beam losses. Studies are underway to compare a DTL with FOFODODO focusing instead of FODO and a CCL with doublet focusing instead of FODO. The alternate focusing schemes may have some advantages in their sensitivity to errors.

LEB 4.2.1.3

Several LEB lattices have been designed. Circumferences of 450, 480, 510, 540 meters were considered. The lattices with imaginary transition gamma, or high transition gamma is the characteristic of these lattices. On August 31 these lattices were discussed by the experts. A lattice of 450 meter circumference with transition gamma of 64.9 seems to be a good candidate. This lattice has super periodicity of 3. The lattice has 12 long (5.1 meter) straight sections with zord dispersion.

MEB 4.2.1.4

Dipole magnet design is being reviewed to determine if the Fermilab main injector design is acceptable for the MEB. Several issues are being considered. In order to reduce the peak current in the dipoles, designs with 6 or 8 turns rather than the Fermilab design of 4 turns are being evaluated. We are also looking into ways in which the large saturation sextupole, present during slow extraction, can be reduced. Meanwhile, simulations of slow extraction to ascertain the effects of the saturation sextupole are being performed.

HEB 4.2.1.5

A detailed report on HEB long term dynamical aperture and on the resonant extraction system has been completed. The report, SSCL-296, examines the relative merits of 5cm dipole aperture versus the 7cm aperture option. It will be released for publication after the authors finish reviewing the manuscript.

Efforts are underway to carry out magnetic measurements of HEB-style dipoles following the availability of a bipolar ramp at Fermilab this winter. Fermilab is currently building a high-current bipolar switch for

their collider low-beta operations. A spare switch should become available in December or January, and will be used for bipolar magnet tests. Preparations for these tests have begun.

Collider 4.2.1.6

A mini-workshop was held August 16-17 to review the impact of survey and alignment issues pertaining to collider requirements. Topics covered included: coldmass to vacuum vessel alignment; stands and alignment fixtures; and tunnel requirements. A task force was organized to further develop the requirements for the accelerator controls system; initial efforts will concentrate on developing the requirements for the collider. A synchrotron radiation intercept design has been proposed with a goal of having a point design by early October.

Magnet R&D 4.2.2

Fermilab 4.2.2.1

Dipole Cryostat

The first round of heat leak measurements on MLI blankets from 80K to 20K was completed. Results were not as expected. There is a higher than anticipated heat load through the low temperature blankets. Work on understanding the phenomenon is in process.

We have received all seven prototype reentrant supports from SCI using the wound-in end concept. Tests are progressing on all assemblies. To date, all tested devices have failed the same structural test given the current Design B supports. Thermal testing will be scheduled for later this fall.

We have received our order from ACPT of six composite tubes built to the current support post drawings, but with a modified fiber layup which will increase the shear modulus and thus the lateral stiffness of support post assemblies. These tubes will be assembled into support assemblies and tested for structural comparison with the current design.

We are actively working on the redesign of the SSC dipole cryostat to accommodate the 50mm aperture cold mass. Nearly all of the engineering, design, and drafting resources involved in SSC activities are related to this redesign effort. A design review originally scheduled for August 15 has been delayed until August 29.

Detailed design of most of the long lead items for the cryostat is nearly complete. This includes 80K and 20K shields, vacuum vessel, MLI, and support posts.

Bids have been received on the preliminary bellows bid for the 50mm magnet interconnect. These will be used to produce on further design iteration prior to placing the order.

Design Status

- Coil cross-section is complete. Wedges are released. All end parts are released except inner coil lead ends; these are currently being designed.
- Coil insulation is released. Collar lamination is released.

- Strain gage pack drawings are complete. They will be released during the first week in September.
- End clamps are released.
- Splice and preform configurations are complete. Some splice fixtures have not yet been released. All are expected to be released by mid-September.
- Skins are released. Assembly drawings are in process; most of these should be completed during September.

Short Tooling

- Designs for the inner and outer winding mandrels were completed and released for parts fabrication. Parts have been received for the inner mandrels and assembly has begun.
- Inner and outer curing molds have been designed and released for fabrication. Some EDM laminations have been received.
- Collaring drawings have been completed and released. Some laminated pieces have been received for review.
- Press modifications are planned to allow both yoke/skin and collaring operations for the 50mm dipole. Drawings are in process and will be released in September.

Long Tooling

Design are in process and completion is anticipated within a few weeks for the following:

Expected Completion

Inner & Outer Winding Mandrels	September
Winding Machine Modifications	September
Inner & Outer Curing Molds	September
Collaring	September
Yoke/Skinning Molds	September or October
Press Modifications for Collaring Press	October

The main upper beam of the collaring press has been designed and released for fabrication. The lower beam is being designed and will be released in September.

Orders have been placed for the laminations of all long tooling with the exception being the yoke inset. This will be ordered by September 30.

Magnetic Measurements

No SSC long magnet testing activity occurred in the Magnet Test Facility this month. Magnet DD0027 remains on Stand 5 ready to cool down. Magnet DD0028 was placed on Stand 4 and installation work was begun.

Magnet Development

The testing of short magnet DS0310 was completed and the analysis of data from this magnet is underway. A summary report detailing the history and analysis of the 80 quenches experienced over two thermal cycles will soon be available. A study of the strain gauge data is now beginning.

Magnet DS0311 was collared and keyed on August 28 using the long press. The design prestress values for this magnet were 11000 PSI and 9000 PSI for the inner and outer coils respectively. The average prestress attained was approximately 8000 PSI (inner coils) and 9000 PSI (outer coils) according to the strain gages at the poles. This is within the tolerance band. It is anticipated that the end clamp of this magnet will use collet pieces manufactured either from loaded stycast or from G-10 with the fiber warp in the radial direction. The thermal expansion of either of these materials matches more closely that of the stainless steel clamp than the normal G-10 now used for collets, so that prestress loss in the ends should be reduced during cool down. These parts should be available the first week of September and assembly of DS0311 will resume then. In the meantime, it will be magnetically measured in the free collared state using the mole.

Studies of the collaring procedure continued using magnet DS0312. A report covering the results to date will be distributed the first week of September. Experiments to study the yoke-skin interface during assembly and cooldown were initiated. Results should be available next month. Detailed measurements of cable placement using polished cross sections of magnet DS0307 were made to determine why shimming is required to attain the desired prestress in this series of magnets. Analysis of the data is underway.

Sample collar laminations for the vertically split yoke designed magnets were received and approved. The vendor is currently stamping production laminations.

Magnet Development

Long Magnet Production

Cryostat Area

DD0028: Sent to MTF for testing on August 23.

DS0202: Cold mass from BNL still needs to be put in the cryostat. Assembly will not begin until mid or late September at the earliest.

Miscellaneous: One complete vacuum vessel and two sets of cryostat parts were sent to BNL on August 24.

DD0013: Will be sent to SSCL as soon as shipping arrangements are made around September 17.

DD0015: BNL is arranging shipment of DD0015 to the SSCL. The BNL cold mass stretch truck will leave about September 5.

DD0019: Completed magnet will be sent to ER as soon as they are ready and an air-suspension trailer is available.

Cold Mass Area

Curing Press: Debugging of software for the hydraulic system control is now complete and the press is fully operational.

Yoke/Skinning Press: The cable winches used for insertion and extraction of the mold are now being replaced with a chain-drive system. Work is proceeding so as not to interfere with production schedules. The chain-drive system is expected to be completed by September 28.

Coil Winding:

RCM#3 Outer #2 was wound and cured on August 31.
RCM#4 Outer #1 was wound on August 10 and cured on August 13.
RCM#4 Outer #2 was wound on August 17 and cured on August 22.
17M2009 RCM#3 Outer #1 was measured on August 2.
17M1012 RCM#4 Inner #2 was measured on August 7.
17M2011 RCM#4 Outer #1 was measured on August 23.
17M2012 RCM#4 Outer #2 was measured on August 20.

Coil Assembly and Collaring:

PCM #2 had end clamps installed on August 8 and harmonic measurements taken on August 11. This coil is now ready to be yoked and skinned. Skinning should take place about September 10.

RCM#1 (DC0302) coils were separated to install quench leads on August 15. Installation of quench leads was completed on August 22. Spot heaters will not be installed in this coil. Assembly is being delayed because of poor vendor delivery of spot welded collar laminations.

SSC Short Model Program

DS0310 testing is complete. Results are available.

DS0311 was collared in the long press and is presently waiting for end collets. New collet parts have been molded for this magnet from a composite material and are expected to be ready to install by September 4.

DS0312 is being used for the following collaring experiments:

1. Determination of the correct tooling shims.
2. Cross calibration of short and long collaring presses.
3. Determination of correct material to use for ground wrap slip plane (if any).
4. Determination of relation among pole kapton shims, preload, and collar deflection.

Sections 1 and 2 have been completed. Results are available. There are no plans to test DS0312 cold. Sections 3 and 4 will be done in September. Cold testing of this magnet is still under consideration.

Vertically split 40mm yoke laminations are in stock. Collar laminations samples have been received, inspected, and approved. Stamping of the final collar laminations is now taking place. They will be used in DS013.

Berkeley Lab 4.2.2.2

Superconductor and Cable

The following cables were made at LBL during August, 1990, for use in SSC 50mm bore dipoles:

1. 36-strand outer layer cable--made from CuNi matrix wire, for use in practice coil winding. Approximately 1600 ft. was shipped to BNL and 1600 ft. to FNAL.
2. 30-strand inner layer cable--made from CuNi matrix wire, for use in practice coil winding. Approximately 1200 ft. was shipped to BNL and 1100 ft. was shipped to FNAL.
3. 30-strand inner layer cable--for use in short dipoles. Approximately 1100 ft. was sent to BNL and 1100 ft. to FNAL.

Roy Hannaford from SSCL assisted on the first two runs and Denis Christopherson from SSCL assisted on the third run. This run was completed on August 23 and it used up all available wire. We will resume 36-strand cabling activities when we receive more wire.

Last month, a series of aluminum tube sample holders were prepared and sent to BNL for short sample training measurements; the results were received from BNL this month. In general, the training behavior for the samples in this series of tests is comparable to that experienced in the standard (bolted) BNL sample holders. However, we do not observe a linear relationship between the prestress (applied by varying the shim thickness inside the Al tubes) and the number of training quenches. The next step in evaluating the usefulness of this type of holder is to test samples of the present 50mm dipole cable in order to see if these samples can be tested without excessive training.

Quadrupole Magnets

One Meter Quadrupole Magnets

Our 1-meter model QSC-402 is complete and testing was started on August 30. The collared coil pressures were 5100 psi for both inner and outer coils, end loads were 5100 pounds on the lead end, and 5300 pounds on the return end. Manual welding of the shell on QSC-402, was done while being held in the main 5-meter molding press. While this approach is awkward and not ideal, it worked acceptably and gives assurance that 5m models can be done this way.

4.3K training started on August 30 at 6346A with 6601A on the second quench, and proceeded to 6957A on the 5th, 7436A on the 10th, and 7615A on the 15th quench. All quenches were on the inner layer pole turn. The first 5 were in the lead side in various quadrants and of the remaining 11, 2 were also in the lead side, 7 in the ramp, 1 in the lead end, and 1 in the non-lead side. The quench locations indicate that certain specific improvements should be made in the inner coil construction methods. We have identified plausible reasons for this training behavior and are proceeding to incorporate suitable changes into QSC-403.

Coil winding for short magnet QSC-403 is starting. Special features of this magnet include molded in place end shoes with B-stage prepreg added to the coil ends on both the inner and outer radii, also, this magnet will be the first to use the new design end clamps with tapered ring and collets; care will be taken

to cure with uniform axial tension in the windings. Most other features will be the same as in QSC-402. The current expected completion date for QSC-403 is mid-November.

Long Quadrupole Model OCC-401

Assembly of the eight coils for the first long quad model QCC-401 is complete.

Fabrication of components for the coil collaring press is almost complete. Unfortunately the delivery of the main collar press ring has been seriously delayed. Collaring now should start about mid-October.

Superconducting Cable R&D 4.2.2.3

Major activities of the month centered on the preparation of the statement of work for the Vendor Qualification Program and a working group was established to complete the preparation of the RFP which will be completed in early September for release to industry.

Responsibility for maintaining the schedule for conductor deliveries to the magnet programs at the other national laboratories has been assigned to Denis Christopherson (214) 707-2042. At the present time conductor delivery schedules are being maintained through the end of the pre-production CDMs. This has allowed the identification and resolution of a few potential minor schedule problems associated with magnets added to the program after conductor orders were placed. Sufficient conductor is presently being fabricated or being ordered to adequately cover the needs of the magnet industrialization program and the associated R&D activities.

The first samples of 2.5 μ m conductor have been received from Furukawa. Cross sections have prepared in the Metallurgical Laboratory. Bare filaments were looked at on the LTV scanning electron microscope. The filament quality is quite good. The electrical properties which FEC reports are just slightly below the present SSC specification for 6 μ m conductor. We consider this an encouraging start to the 2.5 μ m development program. The remaining vendors in the 2.5 μ m program will be supplying conductor before the end of FY90.

The bids for the SEM have been received and an order placed. The microscope will be delivered in mid-September. This will greatly enhance the SSCL's capabilities. Action items assigned by the safety inspectors involving the metallurgical laboratory operation have been completed and the laboratory operator reviewed. We expect to have the metallurgical laboratory in full operation pending the OK from the safety department.

The strand mapping program has been completed, and the final check for bugs has been done. This program will greatly simplify our current techniques and add a new dimension to our strand mapping capabilities.

We are preparing to ramp up for our 50mm cabling plans as we close out our responsibilities for 40mm material. 50mm practice cable has been fabricated and enough material for 4 short dipoles produced. Delivery of "real" strand is scheduled to arrive in the beginning of August. Currently the 50mm cable is being fabricated at LBL. We expect NEEW to receive the tooling for 50mm Inner cable by mid-September.

Insulation Development Program

The insulation development program continues to investigate prime materials characterization; insulation system characterization; and insulation breakdown and short detection.

Brookhaven Lab 4.2.2.4

Long Magnets

Initial testing of DCO201 took place this month with good results, as described under tests and measurements.

DCO203 underwent shell welding, followed by leakchecking, and pressure tests. End plate bullets were installed during the last week of August. This magnet is to be cold tested at BNL with cryostat parts supplied by FNAL.

Interconnection details occupied DCO204 during the first half of August; the last two weeks were devoted to cryostat assembly. The end of the month marked completion of assembly, with FNAL electrical tests underway.

DCO205 was collared, warm measurements were performed, and yoke assembly started.

DCO206 awaits outer cable which is due in the third week of September. This magnet is to be cold tested at BNL with cryostat parts supplied by FNAL.

Short Magnets

Testing of DSO201 was also accomplished this month, as discussed under tests and measurements.

Further tests of DSS021 were interrupted by the initial testing of DSO201, though resumed by the end of the month.

DSO202 underwent end gauging, voltage taps were mounted, and preparations made for collaring.

Coils, including spares, were wound and cured for DSO203, and coil assembly was started.

Coils were also wound for DSO204 and DSO213.

Finally DSK019 and DSK020 were reassembled with high manganese steel collars.

Magnet Tooling and Equipment

Coils

Engineering work continues on long 50mm aperture tooling. Design work continues on mandrel lamination stacking and welding fixtures, on long winding mandrels, and on long formblocks for 50mm tooling.

Collars

Regarding hydraulic components for the side cylinder of the collaring press, the following progress was made: drawings for the hydraulic piping were completed; fittings and materials for the manifolds have been ordered; and manifold drawings have been released to the shops, but still need approval by S&EP before actual shop work can begin.

Specifications for controls for the collaring press are nearing completion.

Testing and Measurements

The initial testing of 17m dipole DCO201 took place this month. The magnet is of standard construction in most respects, but with antiovalized collars and no shims between the collars and yoke at the poles.

The first quench of the magnet was at the limit of the conductor, 6790A (4.3K nom.). Magnetic measurements were made before and after the spontaneous quenching and indicate generally good field quality. The magnet has been warmed for additional magnetic measurements; the second cooldown will follow.

Testing of 1.8m dipole DSO201 was also accomplished this month. This test is the first of a magnet with all-kapton turn-to-turn insulation. The quench performance of the magnet at 4.35K was quite good (the lowest quench was within 2.5% of the limit of the conductor) but unusual in that seven quenches occurred in the outer coils before a four-quench plateau was achieved. In subsequent testing at 3.85K and 3.35K, the magnet reached the limit of the conductor with little additional training. Following the thermal cycle, the magnet again quenched at the 4.35K conductor limit after one retraining quench. The multipoles were generally good.

Project Administration and Support 4.3

Administration Systems and Support 4.3.1

Key accomplishments during August included the execution of a letter contract with PB/MK for A-E/CM services, completion of a laboratory indirect cost distribution system, and completion of the annual salary recommendation process.

Major objectives for September include implementation of the laboratory indirect cost distribution system and completion of the annual salary review process.

The formulation of Standard Practices and Procedures continues to be the top priority of the Procurement organization.

Finance 4.3.2

The Finance Department finalized the proposal on the Laboratory Indirect Cost distribution system and presented it to the Associate Directors for approval. The system is scheduled to be implemented with the onset of the next fiscal year.

At the monthly budget review meeting, the Budget Director gave an overview of budget, cost and commitment status. The last financial plan for FY90 was received by the laboratory; and the remaining

management reserve was distributed among the divisions. The Budget Office is closely monitoring the costs and commitments as well as coordinating the close-out of this fiscal year.

The Financial Systems Section is implementing a forecasting system to facilitate the formulation of FY91 budgeting and data entry into the Deltek budget data base. The system will be available on the Administrative VAX to cost account and budget managers. Training sessions on its use will be held in early September. Work continues on the subcontract tracking system which is planned to be operational in mid-October. A new cost account number structure was developed for FY91 which will better support both OBS and WBS budgeting and cost collection and reporting.

The Accounting and Financial Control section accomplished the following objectives during August:

General

- Compiled and submitted requests for merit/equity increase.
- Assisted in the preparation of the Indirect Cost System presentation.
- Researched methods and components to use in the indirect cost pools.
- Established year end audit schedule.
- Assisted in the preparation of presentation materials for the Board of Overseers meeting.
- Completed corporate reconciliation.
- Became current on bank reconciliations and accounts receivable billings.
- Completed July close, financial statements and analysis packet.
- Established Deltek software parameters for FY91, and are currently testing the indirect allocation system.

Policy and Procedures

- Sensitive Data Policy, and the Indirect Cost Allocation Policy.
- Revised policy on Travel Advances for Non-URA Employees and finalized documentation on Petty Cash procedures.

Property Accounting

- Gave a presentation to MSD on definitions of fund types and reviewed with them the capitalization policy.

Travel

- Restructured travel advance procedures to increase accuracy and the quality of the documentation.
- Completed testing and installation of the Diners Club program to produce a past due list and request letters.

Procurement 4.3.3

During August, the Procurement Department made awards totalling \$9,395,090, of which \$1,780,657 was to Small Business and \$707,959 was to Small Disadvantaged Business as defined in Public Law 101-101.

A letter subcontract is now in effect with PB/MK, the selected A-E/CM for the SSCL. Negotiations are continuing and work is progressing to assure completion of the definitive subcontract by the earliest possible date.

Procurement's participation in public outreach seminars remained active with two being held: Wichita, KS, on August 17 at the request of Senator Bob Dole; and Dallas, Texas, on August 27, sponsored by the Minority Chamber of Commerce, the African American Chamber and various other Chambers of Commerce.

Also completed this month was a major effort relating to work-load planning. Questionnaires were returned by all SSCL Associate Directors which contained their respective listing of major FY91 procurements. We are working on a system whereby the listings can be updated on a regular basis to assist us in our planning efforts.

The formulation of standard practices and procedures remains as a top priority within Procurement. Procurement management will meet with DOE in September to discuss the general approach and also the schedule relating to readiness for a Contractor Procurement Systems Review.

Several productive meetings were held with various program personnel to improve communications through the exchange of ideas and procedures.

Work continued and progress was made relative to the important issues of consultants and non-competitive procurements. While much work remains to be done, a laboratory-wide consultant policy has been issued and is now under review within the SSCL. Non-competitive justifications are also improving and Procurement has selected various ones that are of high quality and provided written comments back to the respective program.

Personnel 4.3.5

We coordinated 173 interviews with hiring managers this month. Seventy new employees joined the laboratory for a total employee population of 757.

We continued with active recruiting in the scientific and technical areas by participating in various hiring conferences and outplacement job fairs throughout the country. Another area of activity has been in updating and improving our applicant tracking procedures for EEO/Affirmative Action reporting.

August was a month of heavy activity in the compensation area. The October 1 merit salary program was begun early in the month with all divisions receiving worksheets complete with review guidelines and budgets. Compensation analysts worked closely with each division to provide guidance and advice. As a result, all salary recommendations were received in a timely manner and analysis has begun. We will present the final results to the Associate Directors for their approval in early September.

In addition to the salary review, the Compensation Section convened several meetings of the classification specification advisory groups who are assisting in establishing the laboratory's new classification system.

We have also completed extensive analysis of our current medical and dental plans and are continuing our investigation of a PPO option for our employees. A proposal will be presented in September.

The Operations Section experienced heavy activity in relocation during August as well as an upswing in coordinating several house hunting trips for new employees. In addition, we established internal systems and procedures for handling the newly-announced Home Mortgage and Bridge Loan Program offered by local banks through the TNRLC.

Activity in the travel area continues to increase. Our increased communication with divisions and revised forms have resulted in much improved service. We presented a comprehensive document to DOE requesting delegation of authority to approve foreign travel to the Laboratory Director. This action should greatly improve the processing time for such requests in the future.

The Employee Recreation Association is now fully-funded and some activities have been approved and have received money to begin. The Employee Recreation Association Advisory Panel has assumed governing control over this activity.

Minority Affairs 4.3.7

The Office of Minority Affairs continues in an active role as participant and guest spokesperson in performing the SSCL's outreach to the business, civic and other interested organizations.

The Director of Minority Affairs conducted numerous meetings with potential vendors and participated as speaker at several functions, including the Minority/Women-Owned Business Symposium in Fort Worth, TX; the Wichita, KS Chamber of Commerce Business Seminar sponsored by Senator Bob Dole; the Dallas Area Coalition of Minority Chamber of Commerce Vendor Seminar; the vendor seminar at the New Zion Baptist Church in Waxahachie, TX, sponsored by Congressman Barton; and he was the keynote speaker at the Dallas Chapter of the Society of Hispanic Professional Engineers meeting.

The Manager of EEO/Affirmative Action held several meetings with the SSC Personnel Director, Staffing Manager and staff from EG&G Personnel Department to clarify their roles and responsibilities in complying with affirmative action objectives.

A meeting was held with the Director of Personnel and all recruiters to discuss the SSCL's EEO/AA status. A new system is being developed to assist the SSC Personnel Department for accountability in tracking incoming candidates seeking employment at the SSCL.

The Manager of EEO/AA participated in the selection of a consultant who will conduct the training on the subject of "Employee Sexual Harassment Prevention". He was involved in a workshop with the Dallas Region of the American Association for Affirmative Action, and finalized the Autumn minority college recruiting schedule which will place emphasis on those colleges that graduate a high number of women and minorities in the mechanical, electrical, computer sciences, and physics fields.

The Manager of EEO/AA attended a job fair sponsored by the City of Dallas to recruit and interview for the SSC; attended the National Urban League Conference in New York City, New York to present an overview of the SSCL, including the various employment and business opportunities available to them on this project; and attended the meeting sponsored by Congressman Joe Barton in Waxahachie, TX.

The Manager of SADBUs continues to review the projected implementation of set-aside procurement operating procedures. Based on recent discussions between the Deputy Director of Procurement, the Director of Minority Affairs and the SADBUs Manager, we have now instituted a review by this office of all purchase requisitions with a value of over \$25,000. In addition, the SADBUs Manager, in conjunction

with Procurement personnel, continues the planning of a system that will target several major minority organizations who will disseminate announced SSCL RFPs with a dollar amount of \$25,000 and over.

The SADBUs Manager reviewed and submitted comments on the Trammell Crow, Stoneridge Building #2, SDB/WOB subcontracting plan. The review of the PB/MK SDB Subcontracting Plan was completed and comments were submitted to Procurement.

The SADBUs Manager and Director of Minority Affairs:

- Met with the Group Leader, Computation and Analysis, Physics Research, to discuss how our office can assist his group in meeting the SSCL's contractual procurement requirements as mandated by PL 101-101, Sec, 304 (a).
- Met with officials of AT&T Network Systems and Apple Computer corporate personnel to discuss the SSCL's commitment in utilizing SDBs/WOBs and how Corporate America can incorporate SDBs into their subcontracting and joint venture plans.
- Participated at a Minority/Women Vendors Symposium co-sponsored by the City of Fort Worth, D/FW International Airport, General Dynamics, Miller Brewing, Southwestern Bell Telephone, and Tandy Corporation.
- Represented the SSCL at the State of Oklahoma Minority Business Conference in Lawton, OK, to inform conference participants about their business development opportunities with the SSCL.
- Participated at a Dallas Hispanic Chamber of Commerce meeting to discuss SSCL procurement opportunities with members.
- Met with EG&G Human Resources officials to discuss our involvement in assisting them in their procurement efforts to find qualified SDB/WOB "Temporary Secretarial Assistance" companies.

Technical Services 4.4

Facilities Engineering Services 4.4.2

The laboratory's inventory of interim office space now totals 186,960 square feet, lab/shop space totals 16,320 square feet, and warehouse space totals 51,490 square for a grand total of 254,770 square feet. Finish out of Stoneridge Building #3 will bring on an additional 47,120 square feet (27,875 square feet of office space and 19,245 square feet of lab/shop space) in September. This will bring the laboratory's total inventory of interim space to 301,890 square feet.

Finish out of Stoneridge Building #3 is ahead of schedule. Installation of systems furniture is now scheduled to begin September 5 with occupancy scheduled to begin September 17.

Construction of the parking lot west of Stoneridge Building #4 was completed on schedule and it is available for use.

Action continues or was initiated on several projects, including:

- Construction of the cooling tower building for the Accelerator Division is nearly complete with acceptance of the building scheduled for September 5.
- Other projects for the Accelerator Division include a welding shop, a materials storage building, and a gas cylinder storage area. All are presently being bid with awards expected mid/late September.
- Plans, specifications, and the cost estimate to upgrade the power to the Accelerator Division laboratories were completed and are undergoing final review. Procurement action will be initiated early in September.
- A contract for additional finish out work for laboratory space in Stoneridge Building #2 for the Magnet Division should be awarded early in September.
- Assist in the resolution of issues and concerns relating to land acquisition for the permanent site.
- Bids for the two portable modular offices for warehousing and incoming inspection functions are due September 12. Delivery and installation is scheduled for mid-October.
- Developed plans and a cost estimate for the renovation of the Medical Center in preparation for the arrival of a new doctor in November.

Materiel Management 4.4.3

Cleanup of the July 1990 property inventory is underway. Over 98% of the items of property and 99% of the value was inventoried. Shortage items are still being found. 5400 equipment items valued at \$13.2M are currently in inventory at SSCL. Inventory reports are due to DOE on October 15.

Warehousing activity was very brisk during August. Significant activity included the following:

1. Three truck loads of magnet components plus a magnet skinning press were received for storage.
2. Two truck loads of furniture from DOE in Houston for short term storage.
3. A loan of excess refrigeration components from Fermilab for storage.
4. Forty pallets of cubicle components were delivered for use in Building #3.

An internal audit was conducted by URA during August. No significant discrepancies have been reported to date. Fiscal year ending operations are underway to support property accounting.

Fabrication Shops 4.4.4

Work continued on the interim shops in Building #3. The finish out of the building is scheduled for mid-September. All equipment requisitions have been released to purchasing and equipment for the shops has begun to arrive on site. We plan to start the installation of equipment and the stocking of the tool crib during September.

Personnel requisitions for Shop Technicians have been approved and interviews are continuing. We plan to have personnel in place to support activating the shops in September.

The plan for the first level II shop in the MDL is complete.

We will begin ordering equipment and tooling in October so as to support a beneficial occupancy of MDL in early April 1991.

Addendums for the Shop Management Plan were received from LTS and MSD.

General Computing 4.4.5

MIS Support

The final release of the restructured Deltek security and menu screens has been accomplished. A project plan has been produced for Deltek advanced payroll. A target date for cutover is scheduled for January 1, 1990. Initial design work is being performed for the EG&G Deltek payroll error checking system. Finance is working on implementing the proposed solution for the Deltek batch file edit.

The subcontract and commitments systems have a critical software problem in Deltek that has to be fixed in order to get through FY91. Initial analysis suggested solutions reviewed in follow-up meetings held with Deltek to resolve displaying full field sizes on Deltek screens. Deltek has proposed cost modifications ranging up to \$140K (i.e., support upgrades to version 3.3) to make the customized changes. MIS determined it would be less costly to do this work in POWERHOUSE and have Deltek write interface routines back to Deltek. The project team is moving toward completing final specifications. A design build task force is being assembled to address the problem. An October cutover with Deltek version 3.3 upgrade is anticipated.

The internal chart of approvals for project user requirements were changed and enhancements added.

The first of several on-line management reports have been completed and additional review is in progress before cutting over to production. Meetings have been held to address Project Management's requirements to meet the CSCS criteria.

Significant progress has been made to the design of the ADP equipment tracking mechanism. Designs and prototypes have been developed and design reviews are in process for a Powerhouse tracking tool for PC and Mac software.

Design work is complete and a functional prototype completed for the EG&G electronic Travel Authorization & Expense Report.

The electronic timesheet request has been assigned and initial design work is in process.

The EG&G employee ID change request required use of a Deltek toolkit. The toolkit was processed through Deltek Q/A against version 3.2 since it is not a released product. The conversion is complete, and we are waiting for completion of tests by users before cutting over to production.

Design and programming are complete for the Budgets vs. Commitments Analysis Report. The project has not been signed off due to enhancements, and documentation is required to close the request.

Final enhancements are being developed for the PO commitments/multi-year funding project.

Users are reviewing the design prototypes for additional reports from the URA Finance link to Purchase Requisition and Purchase Order Receipts.

Design analysis sessions have been held with the end-users of the master employee directory. A meeting was held with URA Personnel to discuss a Benefits & Compensation System project.

SSCL Property Management needs to make changes to the EM Property Management System and wants enhancements done. User defined tables and other features can be utilized in the software.

MIS has been requested to provide resources to help solve short-term and long-term needs for the Project Management organization. Several MIS personnel have participated in the initial meetings to begin providing support as needed.

MSD requested analysis assistance to review and specify an interim solution for doing Bills of Material. The SSC will be designing and manufacturing 150 to 200 prototype magnets and will need manufacturing systems capability.

ADP Planning, Standards and Procedures

The following documents are currently being reviewed by DOE and are awaiting formal approval:

- Doc. No. 6235-L90-016: Optical Disk System for MSD
- Doc. No. 6235-L90-019: UNIX Server for SSCL Computer Operations
- Doc. No. 6235-L90-020: CAD Peripherals for LTS Division
- Doc. No. 6235-L90-021: Data Communications Network Expansion for the SSCL
- Doc. No. 6235-L90-023: Amendment to Plan #6235-L90-04 for MSD
- Doc. No. 6235-L90-024: Supercomputer for Accelerator Division
- Doc. No. 6235-L90-025: Cryogenic Simulation/Collider Ring Systems for Accelerator Division

Draft copies of the SSCL Strategic Plan and FY91/92 Short Range Plan have compiled from each of the six SSCL divisions into an overall laboratory report which will be submitted to DOE for review and approval. This plan will be in place for the new fiscal year and is designed to reduce significantly the number of acquisition plans, such as those above, which need to be prepared.

User Services

Specifications were written for the Project Management Office's Novel Server. Research is being conducted for a TCP/IP solution for the server. In addition, in order to provide remote access to the server, a security program is being sought for the modems.

Progress is being made by the MIS group towards setting up a software tracking system on Powerhouse. The system is designed to help coordinate the processing of software requests, of which there were 350 in August, and cut down on the time spent troubleshooting software requisition problems.

A relational database program, which features importing pictures into records and easy modification of structure and layouts, is currently being evaluated.

Computer Operations 4.4.5.6

Computer Operations is currently working on several long-term and many short-term projects. These projects include preparation for the 500 mips implementation, updating user and operations documentation, contributing to various LTS documents, general cleanup of user accounts on the SSC systems, and continued growth in UNIX expertise.

The SSCL Computer Users Guide is being rewritten to accommodate the many changes in SSCL computing over the last year. In addition to the subjects covered in the original guide, the new guide will include updated configuration and network diagrams, information on UNIX systems, Macs and PCs, Computing and Communications organization charts and charter overviews of each computing support section. It will reflect the highly integrated nature of systems at the SSCL. Distribution is scheduled for late September.

The SSCL is dedicated to the concept of distributed computing. A small but critical step towards this effort was achieved this month when a SUN workstation successfully opened an X-Window application on SSCVX1. This was the first documented time that a SUN workstation successfully used the alternate TCP/IP transport for X-Windows on the VMS system. The problems encountered in this effort will undoubtedly continue to haunt us in future integration endeavors. Documentation does not cross vendor boundaries and there are subtle differences in X-Window implementations on various systems. There are commands that must be executed on both client and server before the windows can be opened. Internal documentation will be the best (and sometimes the only) resource available to the users. The necessary commands and known differences between systems will be documented by Operations and made available to the user community through the User's Guide and other public notifications.

A project implementation plan for the 500 MIPs has been initiated. Computer Operations is charged with the tasks of installation, documentation, and operation of the system. High level plans have already been written and a team of individuals in Operations has been assigned specific tasks. Detailed plans are currently being developed for installation coordination, basic software testing, and facilities scheduling.

The proposal for a laboratory UNIX server has been completed and has verbal approval from DOE. The procurement cycle should be completed by October. The SSCL user community is made up of physicists, engineers, managers and programmers who have historically been VAX/VMS users. Since SSCL is a member of the Open Software Foundation and subscribes to the philosophy of software portability between hardware platforms, the standard operating system at SSC will be UNIX. It is critical for the general user community, system managers and programmers to begin the transition from VMS to

Communications 4.4.7

A radio survey of Ellis County and the Dallas/Ft Worth area has been completed and the results were very satisfactory.

Other significant activities included a meeting held with LBL regarding FDDI and SONET networks for SSCL installation of a synchronous voice grade line for Lockheed support. In addition, 40 data and 40 voice links were established for the Magnet Test Laboratory area.

Engineering Support/Standards 4.4.8

Tasks Completed in August

The SSCL procedures for the Document Numbering System and the Part Numbering System are being changed to satisfy requirements from all divisions.

The Drawing Breakdown Structure procedure was submitted to Project Management. This procedure establishes the requirements for documentation that will provide a drawing breakdown structure for the SSC, peripherals, and support equipment.

Procedures in Process

The technical report procedure is in preparation. This standard establishes the procedures for report preparation, identification, approval and distribution; provides a suggested general outline for technical reports; describes technical publication procedures; and details the requirements for safekeeping technical reports at the SSCL.

Other Activities

Twelve copies of the "Modern Drafting Practices and Standards Manual" were received August 20, and will be distributed to Engineering Design Support in September.

Work done on the SSCL Strategic and Short-Range Plan included soliciting proposals and submitting three recommendations for the Strategic Plan:

- (1) Maintenance management system,
- (2) Data I/O machines and firmware,
- (3) Interactive material requirements planning (MRP) system.

Work continued on the Engineering Standards and Support Management Plan.

Meetings were conducted on the following subjects:

- (1) Application, assignment, and general philosophy of part numbers;
- (2) Software standards;
- (3) Part numbers, formats, and drawings;
- (4) Document tracking system.

Continued work for an MRP or MCS system.

Metrology Lab/Calibration and Repair Labs 4.4.9

Receiving Inspection and Calibration/Repair Lab

The Calibration/Repair Laboratory set up a calibration recall schedule for several types of oscilloscopes. The oscilloscopes will be recalibrated when the calibration system is complete. The final draft of a Calibration Recall Notification form was developed to ensure that all measuring and test equipment user/owners are notified before their equipment is overdue for calibration.

We worked with Procurement on specifications for the modular Calibration/Repair Laboratory and reviewed reports on the VAX Property Management System to ensure that all measuring and test equipment received at the SSCL is properly tracked by the Calibration/Repair Laboratory.

Additional manpower was devoted to working on the Quality Assurance procedures and guidelines for Receiving Inspection and the Calibration/Repair Laboratory.

Incoming inspection was incorporated into Accounting's Deltek system. This provides a means of verifying measuring and test equipment before purchase.

Metrology Laboratory

Several interim drafts on Quality Assurance and Incoming Inspection Operations were completed and are being evaluated.

We worked with the Magnet Group on equipment and supplies for the temporary Metrology area in Building #3. The area will include a calibration area, test equipment spares area, and an engineering work area.

Three software programs for instrument control were evaluated. Procurement is in the process of buying one program for the Metrology Laboratory which should arrive in 4-6 weeks.

Several MIL-STD, ANSI, and OSHA publications concerning the Calibration and Metrology Laboratory were reviewed and incorporated into the laboratory procedures and guidelines.

Staff Services 4.4.11

Central Files

Various meetings were held pertaining to Central Files DBMS customization, reporting needs of the DBMS and required changes to the DBMS.

Final modifications to Central Files DBMS document coding system are complete and all lists and codes in Central Files have been updated.

Central Files Coding/Shelving in Progress

Approximately 400 documents have been coded and shelved. The process is very time consuming due to the requirement for secondary subject coding during the logging process.

GSA/Lease Vehicles

Editing and development of the GSA/Lease vehicle policy and procedure manual continues with a working draft published for use. A copy is being prepared for DOE to review.

The first step in the process of updating GSA billings to include subtotaled statements for using departments, budget codes and account references has been initiated.

The second edition of the Transportation Services Manual was submitted for internal review prior to submittal to DOE for review.

Facility Support

Arrangements were coordinated to inspect excess furniture at the Nevada Test Site. Inspection resulted in a "no-interest" decision.

We worked with warehouse employees to assure that the Parkerville furniture inventory list descriptions matched the items to reduce error when pulling inventory.

A memo was written to Accounting recommending convenience copiers and supplies be funded from an overhead account.

Purchase requisitions were coordinated for computer equipment and other items for DOE.

Medical Office

A meeting was held with the Medical Review Committee to discuss approval of the Wellness Alert Memo, the health fair and other activities within the Health Center.

A CPR/First Aid Certification class was held in the Health Center on August 14, with seven employees being certified.

A Stress Seminar was held in the Auditorium by Dr. D. Dean Gafford for all employees.

We met with engineering personnel to discuss the floor plan reconstruction of the Health Center. The floor plans and cost estimate are complete.

A safety meeting was attended to discuss the certification in CPR and First Aid for all Safety Wardens.

A meeting was held to discuss nutritional changes in the cafeteria. The new dietary changes in the cafeteria will take affect September 4.

Food Service/Special Events

Special events is gearing up for Fall; we have 500 tickets available to the State Fair of Texas, discounted to \$5.00. We will meet with the Duncanville Arts Association to look at their Fall programs.

Security

A courtesy call was made to the Waxahachie Police Chief and to the Sheriff of Ellis County to discuss security at the Ellis County site.

An Emergency Warden training class was presented and plans are being made to have another one in the near future.

An emergency preparedness plan is being prepared.

We met with vendors to discuss the security system update. A meeting was then held with Procurement to decide which vendor would install the updated security system in Buildings #2 and #3.

A trip was made to Fermilab to view their security procedures/operations.

Technology Transfer 4.4.12

A Technology Transfer Office Management Plan and an eight-year budget forecast were prepared. Input was provided for the SSCL Legal Department's *Patent Policies and Procedures Process Flow Models*.

SSC Laboratory Directors Office 4.5

Members of the directorate traveled to India to discuss Indian participation in the SSC project and to attend the 25th International Conference on High Energy Physics, held in Singapore.

The SSC Board of Overseers met at the laboratory on August 24-25 and were informed about the project's status.

A summary of the July meeting and recommendations of the Program Advisory Committee (PAC) was distributed to the high energy physics community.

Preparations continued for the *Symposium on Detector Research and Development for the SSC*, to be held in Fort Worth, Texas on October 15-18, and for the *Atlanta Conference on the SSC*, a conference on scientific and industrial opportunities at the SSC to be held in Atlanta, Georgia on November 14-15.

Environmental baseline studies and characterizations were undertaken in Ellis County. Several new wells were sampled for baseline measurements of radionuclides, and more radon measurements were made in the Eagle Ford Shale.

Contacts were made with Ellis County organizations interested in preserving historic properties, to learn if there are important historic properties which may be impacted by the SSC but are not included on the "windshield survey" by Hardy-Heck-Moore. None were found.

Considerable effort continued on preparation of the SEIS, which included responding to written questions from concerned citizens in Ellis County.

Physics Research 4.6

Library Services 4.6.1

A considerable upsurge in a variety of library requests occurred during the month of August, including more than 40 requests for EOIs. The library presently exchanges preprints with 324 institutions worldwide. Approximately 324 preprints were received in August and approximately 1,000 preprints were entered into the SLAC database. SLAC has adopted our idea of sending the weekly preprint list to requesters via VAX/E-Mail.

A public reading room, mandated by DOE, has been set up in the general library area. Documents available for consultation at the reading room include: the SEIS; the Site-Specific Conceptual Design Report (SCDR); the SCDR Executive Summary and the Data Requirements.

The library has now joined AMIGOS, a Texas-based non-profit consortium which provides a range of library automation services. Several CD-ROM products have been ordered through AMIGOS.

Technical Information and Publications 4.6.2

The newly created Forms group has designed, developed and approved a Travel Authorization form and a Cash Advance form for Travel Services.

The IISCC proceedings, Super Collider 2, have been submitted to the Plenum Publishing Co. for publishing.

The author's kit for preparation of papers, articles and reports for the Detector Symposium sponsored by the laboratory in October 1990 has been mailed to the authors.

UNICOR representatives from Washington, D.C. and Leavenworth, KS visited to discuss printing and storage of forms.

The SCDR and SCDR Executive Summary were printed and distributed.

The SEIS has been received. This document has been distributed to the public reading rooms of designated libraries. The SEIS is currently available to the public upon request.

Experimental Facilities 4.6.3

August was a month of consolidation for the Experimental Facilities Group. Several key new members joined the group and with the new people, the group will be better able to help the detector groups in development of the Letters of Intent (LOI) that are due by December 1. The group will also be working on developing the tools necessary to establish the baseline cost and resource requirements once the detectors collaborations have passed on to work on the proposals. As such we're beginning to develop unit costs for various generic systems such as water, cryogenics, detector gas systems, etc.

The Detector Safety Panel report is slowly moving along. Henry Lubatti is spending a short time at the laboratory to develop a compendium of safety concerns for the detectors as presented in the Expressions of Interest (EOIs). We've also begun to work with the Systems Engineers on developing the long term detector safety policies.

The muon steel design for the SDC detector continues to make progress. Some of the finite element analysis is being done to study the stresses in the steel and to look at the magnetic field non-uniformities.

We are developing a more efficient footprint for the test beams which concentrates on the development of facilities for beam from the MEB. Extension to HEB energies can be incorporated as a future upgrade. By concentrating on a low energy design, the foot-print can be made considerably shorter, and the beam optics are much simpler.

Experimental Systems WBS 5.0

Experimental Systems R&D 5.1

Planning continues for the Symposium on Detector R&D for the SSC to be held October 15-18, 1990 in Fort Worth, TX. The organization of the program is nearing completion. Instructions have been mailed to all speakers for the preparation of manuscripts for the published proceedings. The assignment of session chairmen has begun with the objective of producing and distributing the final agenda for the meeting by the beginning of October.

The laboratory made preparations for the receipt, duplication and dissemination of the anticipated Detector Subsystems R&D progress reports and requests for FY91 funding. Besides the twenty-four projects funded in FY90, we expect additional requests for new areas of investigation. These documents will be distributed to the International R&D Committee to be reviewed in a meeting at the SSCL on October 18-20, immediately following the Detector Symposium. The members of the Committee are expected to attend the Symposium, as much of last year's work in the subsystems projects will be presented there.

Detectors 5.2

Active discussions continued through the month with the proponents of the EOIs following communication of the decisions of the laboratory on the basis of the advice of the PAC that met July 14-20. Particularly for the large detectors set forth in the EOIs (SDC, EMPACT, L*, and TX), there were ongoing discussions leading to statements of work that would be the basis of funding for systems integration, engineering, and costing activities until the end of the calendar year, i.e., through the period of preparation of LOI's and their consideration by the PAC. A decision was taken near the end of the month to use some FY90 funds to support a portion of this work.

Lab Operations Support WBS 6.0

Physics Program Support 6.1

Division Office 6.1.1

The baseline budgets presented in the June DOE review will be modified to reflect the budget actually received from the SSC Project Office.

Move

Experimental facilities engineering, parts of experimental physics, and the technical publications and information group will move to Building #3 in September.

Meeting

A meeting of the SSC Computing Policy Committee is scheduled for September 27-28 to continue earlier discussions on policy regarding software research and development, and to finalize the report of their recommendations requested by the laboratory director

Theory 6.1.2

Contacts continued with several theorists on potential visits during the coming year. Topics for workshops on theoretical/phenomenological subjects in the winter and spring were explored.

Experimental Physics and Facilities 6.1.3

Preparation of the laboratory space for calorimetry, tracing, and electronics R&D continued in Building #3, with beneficial occupancy expected in mid-September. The acquisition of laboratory equipment for these activities also continued. Several experimental physicists arrived during the month to take up SSCL positions, as well as some guest scientists.

Computing and Data Analysis 6.1.4

Physics Support

The systems development section is continuing to support the 500 MIPS acquisition project. The Cooperative Processes Software (CPS) is being used at the process level as distributed computing software. Two representatives from this section are currently supporting the CPS software which has been installed and demonstrated on several different types of workstations. A project is now underway to port physics code to run with CPS. The first code to be ported will be ISAJET.

Some preliminary analysis and design work is being done on the subsystems identified thus far for the 500 MIPS acquisition. This task is designed to proceed in parallel with the procurement of the first phase of what will ultimately be a distributed processing ranch supporting detector simulation.

Project planning for the 500 MIPS resource implementation is currently being initiated. The major project areas and their primary components have been identified. A detailed breakdown of each component and milestone schedule dates for meeting overall project goals is also being produced.

Higher resolution requirements analysis for the 500 MIPS project has produced a detailed list of supported user interactions with the system to be validated presently. Included is the corresponding data flow model of the system.

In the effort to integrate the Mac personal workstations with the Silicon Graphics file server, the systems development section has developed an XWindow-based calendar tool. In a related effort, the calendar schedules for the computation and data analysis group are being consolidated using this tool.

The first release of the Network Queuing Software (NQS) has been obtained from Cosmic Corp. This software has been ported to the Silicon Graphics and the Sun workstations.

SSC PROJECT

FY90 STARTUP (NEAR TERM) MILESTONES

<u>MIL NO.</u>	<u>WBS NO.</u>	<u>MILESTONE DESCRIPTION</u>	<u>COMPLETION DATE</u>			<u>COMMENTS</u>
			<u>ORIGINAL PLAN</u>	<u>CURRENT PLAN</u>	<u>ACTUAL</u>	
1	2.0	AE/CM Criteria	3/89		4/89	
2	2.0	Start Geotech	5/89		6/89	First Phase Complete
3	3.0	SE/I RFP Issued	6/89		6/89	
4	2.0	Footprint Fixed	8/89		8/89	
5	3.0	SE/I Contract Award	8/89		10/89	
6	3.0	First Draft PMP Issued To DOE	8/89		8/89	Subject of Semi Annual Review
7	4.0	DOE Approval To Proceed With In-House Design For Early Critical A-E/CM Activities	8/89		8/89	Official 10/2
8	2.0	Land Acquisition Footprint Specification Documentation Complete	8/89		9/89	
9	1.0	MIP RFP	9/89		5/90	Draft
10	3.3	Key Finance Staff Hired	9/89		9/89	
11	2.0	First Tunnel Section Location Set	9/89		9/89	
12	1.0	Tunnel Cross Section Defined	9/89		10/89	
13	3.0	First DOE Semi Annual Review	9/89		9/89	

SSC PROJECT

FY90 STARTUP (NEAR TERM) MILESTONES

MIL NO.	WBS NO.	MILESTONE DESCRIPTION	COMPLETION DATE			COMMENTS
			ORIGINAL PLAN	CURRENT PLAN	ACTUAL	
14	3.3	SSCL Accounting System In WBS Format Shown in August Monthly Report	9/89		11/89	In October Report
15	3.3	Deltek Accounting System Operational	9/89		9/89	October 1 Initialization
16	3.3	Key Procurement Staff Hired	9/89		9/89	All Key Positions Filled
17	3.3	Procurement Policies Procedures Manual Complete and Issued	9/89		9/89	Submitted To DOE-CH For Review And Approval
18	3.3	Deltek Purchasing Module Operational	9/89		9/89	
19	3.4	SSCL Vax Delivered	9/89		10/89	
20	3.1	PMRS Software Installed and Tested	9/89		9/89	
21	3.1	Eng. Mgmt. System Plan - Final Draft Issued	9/89		4/90	
22	2.0	First SEIS Draft Issued	10/89		10/89	
23	2.0	AE/CM Contract Award	10/89		5/90	
24	3.1	PMRS Implementation Complete	10/89		10/89	Software Implementation
25	3.4	MIS Hardware Operational	10/89		10/89	
26	3.1	Config. Mgmt. Plan Complete	10/89		1/90	
27	3.4	Draft Document Control Plan Issued	10/89		10/89	

SSC PROJECT

FY90 STARTUP (NEAR TERM) MILESTONES

MIL NO.	WBS NO.	MILESTONE DESCRIPTION	COMPLETION DATE			COMMENTS
			ORIGINAL PLAN	CURRENT PLAN	ACTUAL	
28	2.6	AE/CM-SSC Performance Objectives & Syst. Requirements Revisions Complete	10/89		5/90	Draft
29	3.0	Issue First Funding Directive	10/89		10/89	
30	3.0	First C/SCS Report Test	10/89		11/89	October Data
31	1.0	Collider Dipole Criteria Established	10/89		4/90	
32	3.0	Initial Baseline Issued	11/89		5/90	
33	3.1	First Monthly Report With Automated PCSR	11/89		9/90	First Draft
34	3.1	Baseline Cost Estimate Complete	11/89		1/90	
35	3.2	SEMP Approved and Issued	11/89		2/90	
36	3.1	PMP - Final Draft Issued	11/89	11/90		
37	3.1	Key QA Staff Hired	11/89		1/90	
38	3.5	ES&H Management Plan Draft	11/89		1/90	
39	3.5	ES&H Final Draft Issued	11/89	11/90		
40	3.1	SSC WBS/WBS Dictionary Complete and Issued	11/89		5/90	
41	1.0	Prototype Dipole Specification Complete	11/89		3/90	
42	1.0	Magnet Criteria Complete	11/89		3/90	

SSC PROJECT

FY90 STARTUP (NEAR TERM) MILESTONES

<u>MIL NO.</u>	<u>WBS NO.</u>	<u>MILESTONE DESCRIPTION</u>	<u>COMPLETION DATE</u>			<u>COMMENTS</u>
			<u>ORIGINAL PLAN</u>	<u>CURRENT PLAN</u>	<u>ACTUAL</u>	
43	3.3	Deltek Procurement Interface Pgrm Imp	12/89		2/90	
44	3.1	Configuration Mgmt Policy Statement Issued	12/89		2/90	
45	3.4	Document Control Policy Statement Issued	12/89		1/90	
46	2.6	CCD-Procedures Manual Second Draft Issued	12/89		3/90	
47	3.0	Supplemental Site Specific CDR Issued	12/89		12/89	
48	3.0	Start Baseline Validation	1/90		1/90	
49	3.1	QA Policies and Procedures Complete	1/90		5/90	Draft
50	3.1	QA Data Base Requirements Document Issued	1/90		5/90	
51	2.1	A-E/CM-Complete Near Term Work Auth Packages	1/90		8/90	Letter Contract NTP
52	4.0	First Land Tract Available	1/90		7/90	
53	1.0	Award Magnet Prototype Contract	1/90	11/90		
54	2.0	Award MTL/ASST Fac Cold Test Fabrication Contract	1/90	9/90		
55	3.3	Final AAAP Approved and Issued	2/90	10/90		
56	3.1	DOE CSCSC Readiness Review	2/90	6/91		Determined by DOE

SSC PROJECT

FY90 STARTUP (NEAR TERM) MILESTONES

<u>MIL NO.</u>	<u>WBS NO.</u>	<u>MILESTONE DESCRIPTION</u>	<u>COMPLETION DATE</u>			<u>COMMENTS</u>
			<u>ORIGINAL PLAN</u>	<u>CURRENT PLAN</u>	<u>ACTUAL</u>	
57	3.1	PMP Approved and Issued	2/90	11/90		
58	2.6	CCD-Procedures Manual Issued	2/90		5/90	Preliminary
59	3.0	Baseline Validation Complete	2/90		8/90	
60	4.0	Supplemental Environmental Impact Statement Issued	2/90	12/90		
61	2.0	A-E/CM On Board	2/90		8/90	Letter contract

Baseline Schedule (Sep 90)
Major Project Milestones

<u>Number</u>	<u>WBS</u>	<u>Description</u>	<u>Date</u>
M1-1	2.1.1	A-E/CM Letter Contract & NTP	AUG-90
M1-2	3.0	Baseline Validation Complete	JUL-90
M1-3	1.2	CDM Authorization to Incur Costs	NOV-90
M1-4	3.0	SEIS Record of Decision (ROD)	DEC-90
M1-5	2.1.1	Start SSC Civil Construction	MAR-91
M1-6	1.1.8.8.23	Accelerator String Test Complete	OCT-92
M1-7	1.2	Start First Half Sector CDM Delivery	APR-94
M1-8	5.0	Notice to Proceed (NTP) Experiment Halls	JAN-93
M1-9	1.1.6	First Collider Half Sector - Start Installation	MAR-94
M1-10	1.1.2	LINAC Start Commissioning (600 MeV)	OCT-94
M1-11	1.1. 6	First Collider Half Sector - Start Cooldown	MAR-95
M1-12	1.1.4	MEB Start Commissioning	APR-96
M1-13	5.0	Beneficial Occupancy of Large Experiment Halls	JAN-97
M1-14	1.1.5	HEB Start Installation	AUG-96
M1-15	1.1.4	MEB Test Beams Available	OCT-96
M1-16	1.1.5	HEB Start Commissioning	OCT-98
M1-17	5.0	West Detectors - Start Commissioning	MAR-99
M1-18	1.1.6	Collider - Start Commissioning (beam)	MAR-99
M1-19	1.1.6	Beam to Exp. (End of Project/Begin Op)	SEP-99

MEETINGS/CRITICAL EVENTS

Date	Meeting Subject	Participants	Location
Oct 16-18	R&D Symposium	350	Fort Worth, TX
Oct 19-20	R&D Committee	30	SSCL
Nov 30 - Dec 1	Machine Advisory Committee	25-30	SSCL
Dec 13-15	Program Advisory Committee	30	SSCL
Dec 14-15	Scientific Policy Committee	25	SSCL